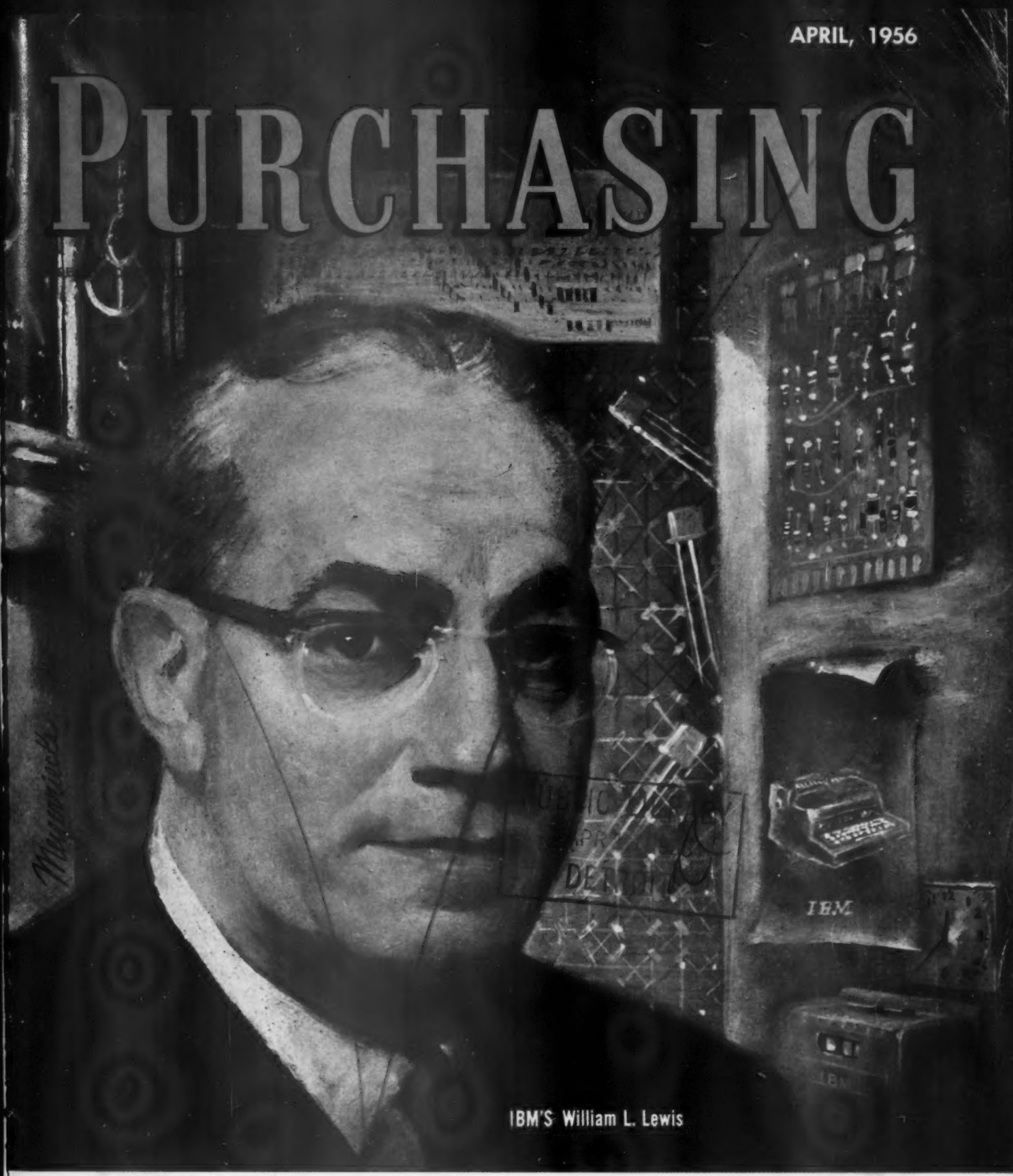
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PURCHASING



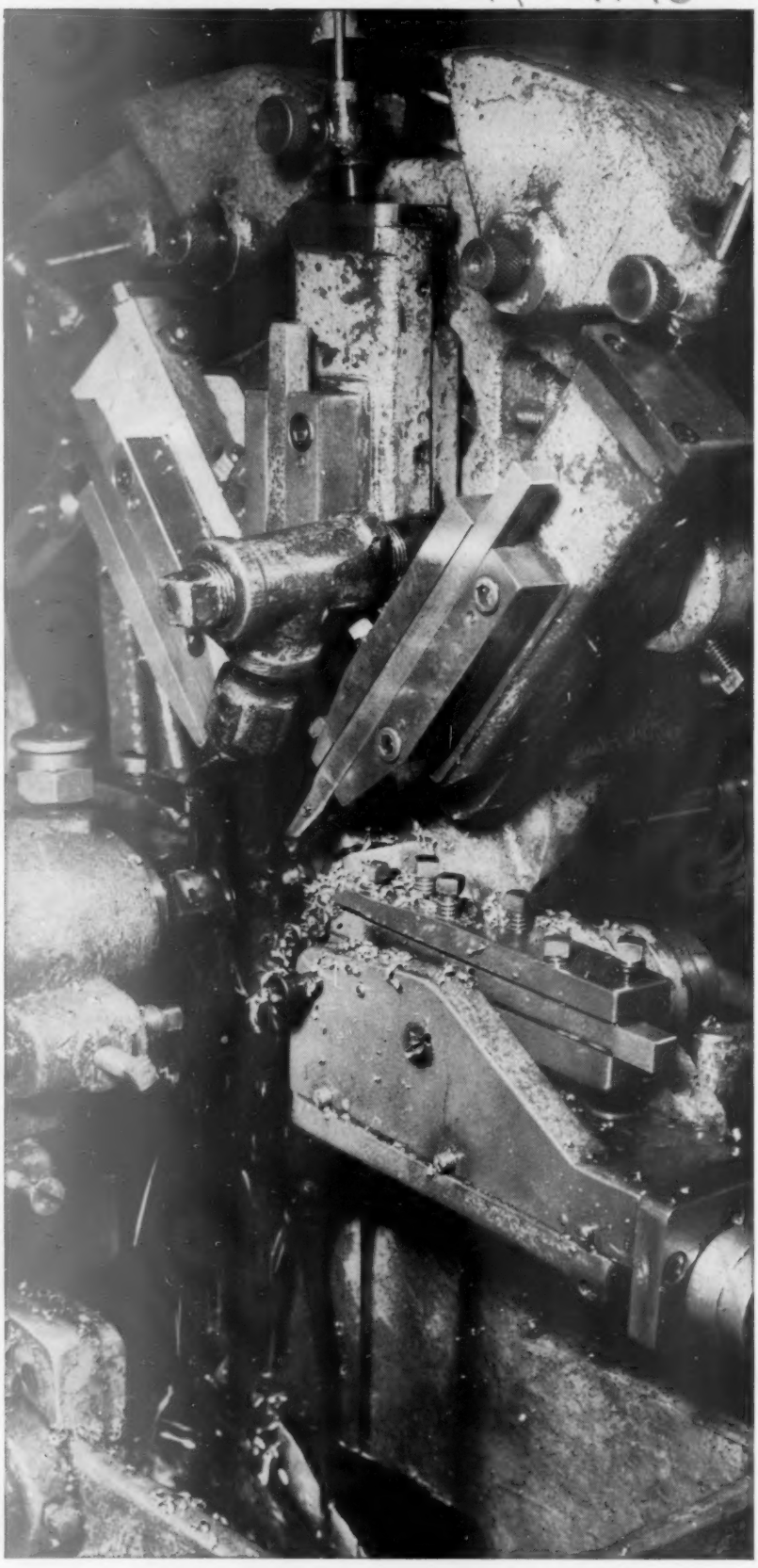
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Imaginative Buying Methods at IBM

A special report, covering—Purchase Analysis—Vendor Rating —Selective Follow-Up—and other modern purchasing techniques. Page 71

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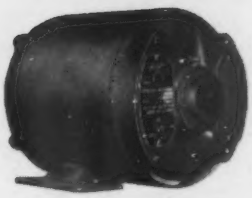
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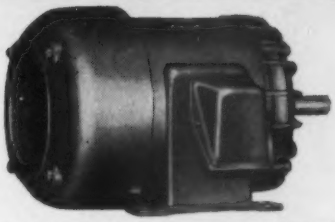
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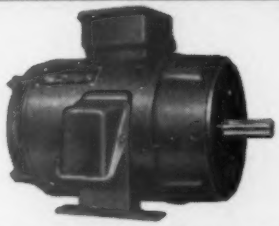
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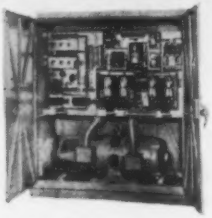
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INDUSTRIAL PRODUCTS DIVISION

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For More Information Circle No. 156 on Inquiry Card—Page 17→



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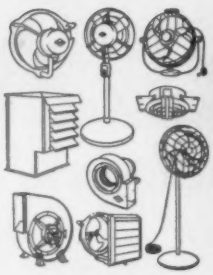
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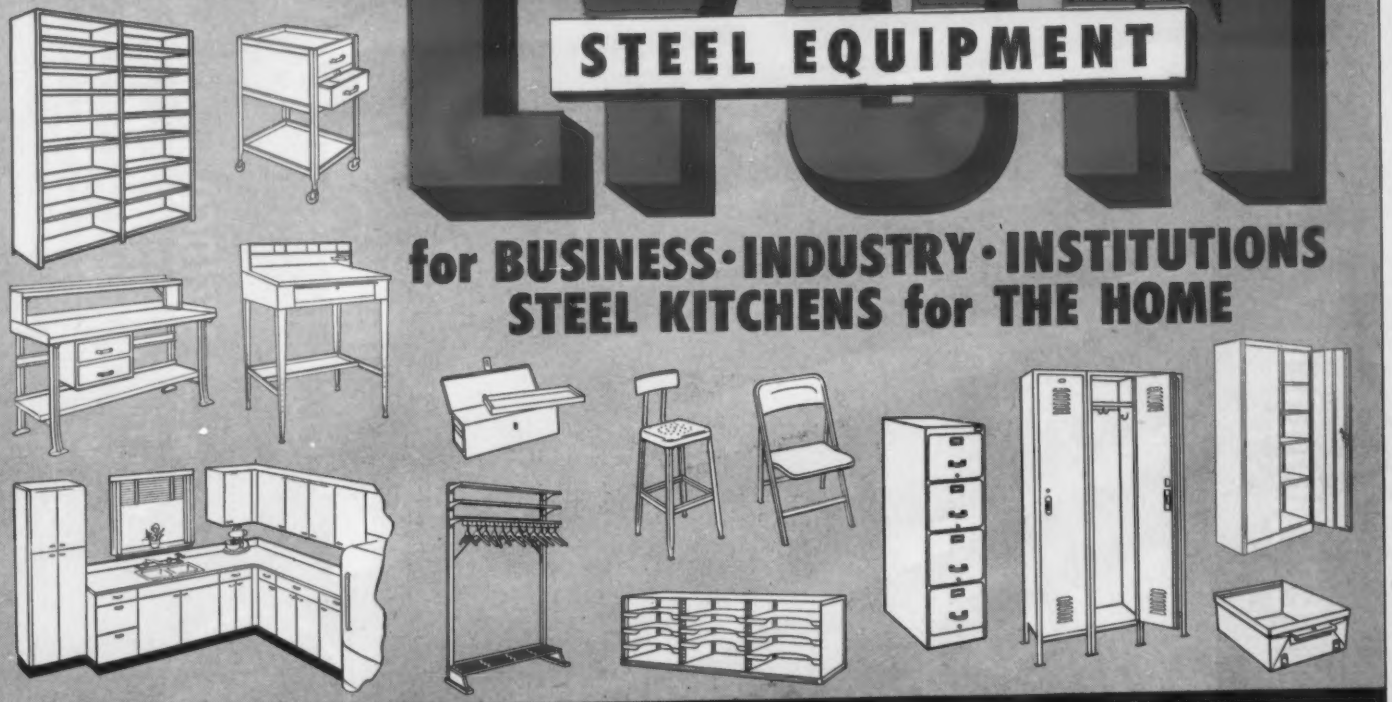
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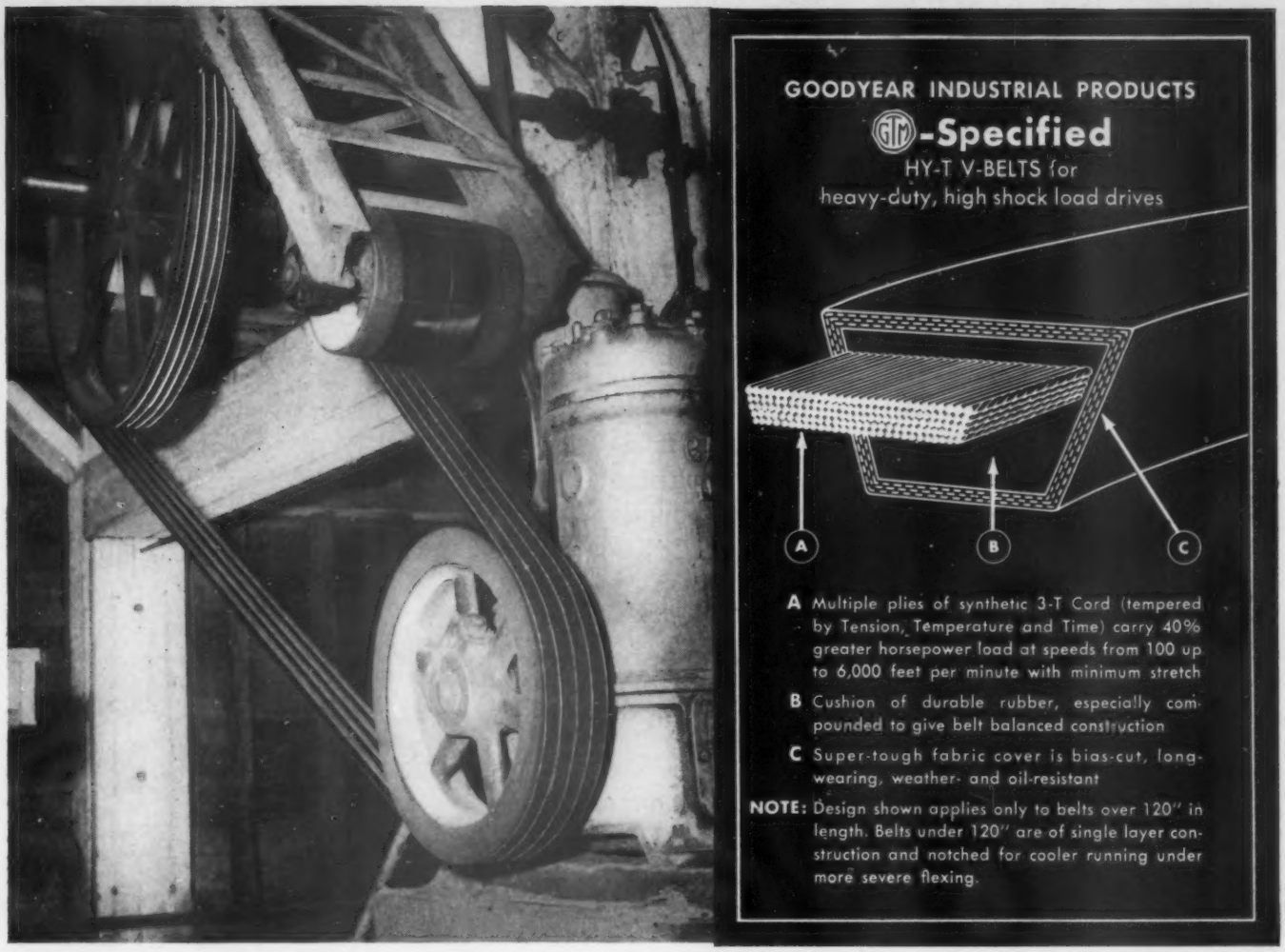
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by consulting the Goodyear Distributor-G.T.M. team

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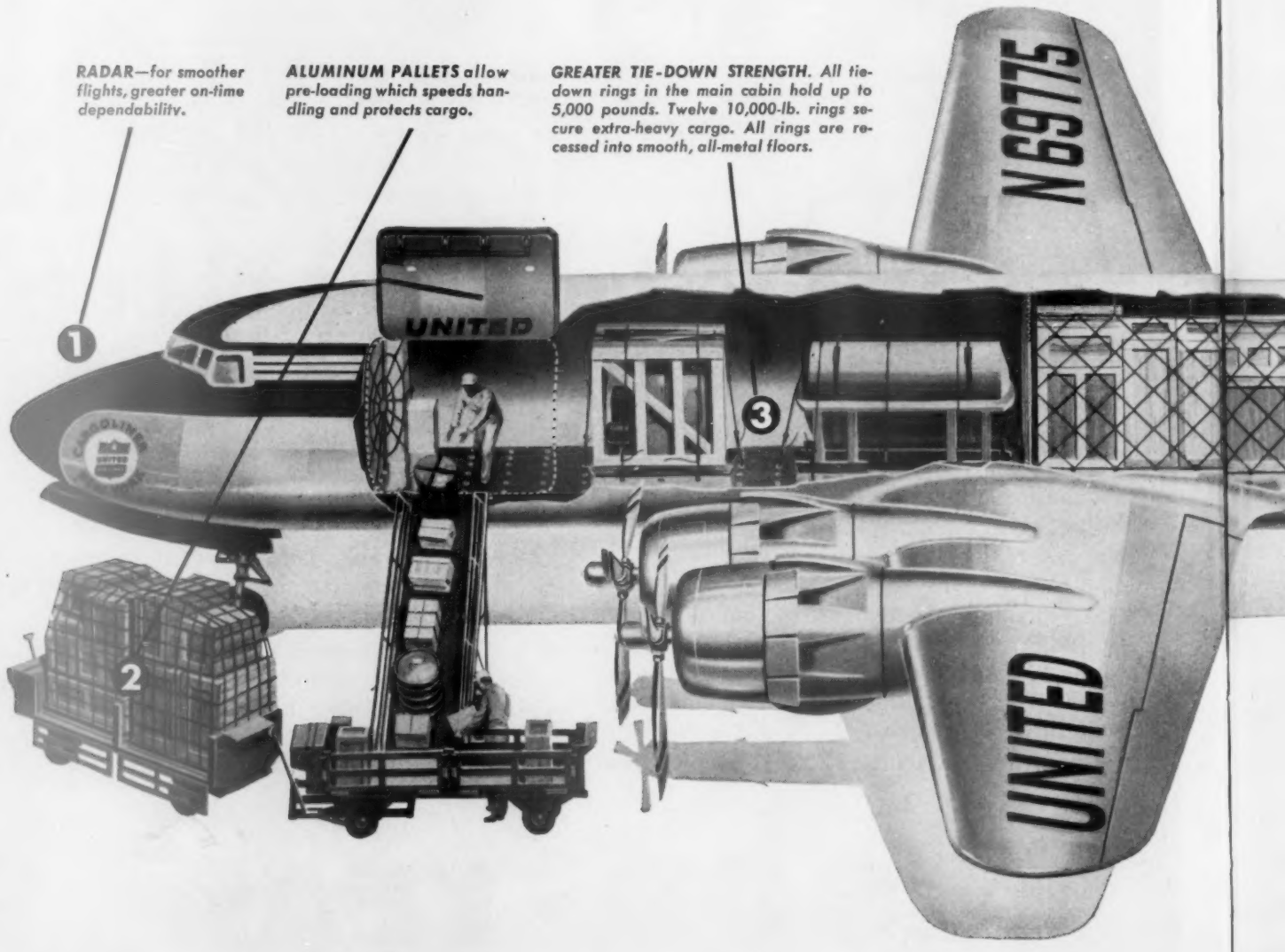
A New Standard of Air Freight Service! In the latter part of April the first of five new DC-6A Cargoliners® will join the United Air Lines fleet. Added to the ten all-cargo planes we have now, these new DC-6As will increase our all-cargo space by nearly 70%.

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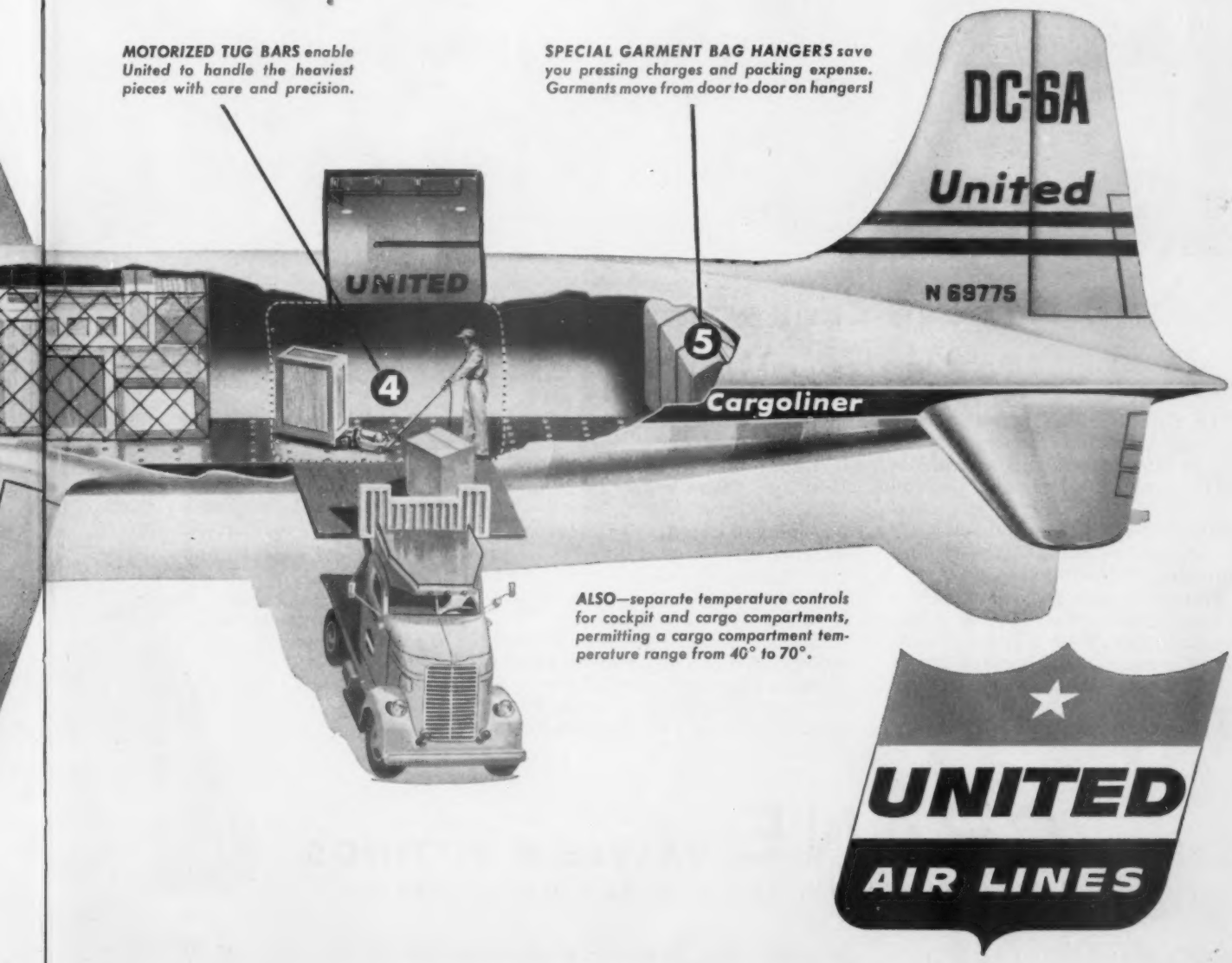
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UNITED AIR LINES

For More Information Circle No. 162 on Inquiry Card—Page 17



These Crane valves stay tight on soap oils and fatty acids

THE CASE HISTORY—Leakage through valve seats in raw materials supply lines posed a serious problem for Davies-Young Soap Co., Dayton—makers of various type soaps and cleaning fluids. Unwanted materials leaking past metering stations would infiltrate processing vats.

Four different makes of valves were tried before these Crane valves were installed. With all four, results were the same—seat leakage developed quickly; the valves lasted no more than 4 to 8 weeks.

Valve replacement costs were a factor on top of production losses.

The condition was remedied on installation of Crane No. 1670 Ni-Resist cast iron valves in January 1954. Eighteen months later—with no piping maintenance and no shutdowns whatsoever—the Crane valves are still holding tight. And they show no deteriorating effects from the fluids handled.

Crane Ni-Resist gates don't *look* much different from similar valves of other makes. Their difference is in properly designed, accurately finished seating of 18-8 SMo stainless steel—plus the *extra* erosion-corrosion resistance of Ni-Resist bodies and bonnets cast by Crane. Thrifty buyers know these valves have no "equal" for handling many hard-to-hold, mildly corrosive fluids.

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For More Information Circle No. 163 on Inquiry Card—Page 17

WASHINGTON REPORT

for purchasing agents

by A. N. Wecksler, Washington Editor

April, 1956

KEEP YOUR EYE ON INVENTORY

Inventory policy will bear close watching during this year. There are three points where the economy is sensitive--autos, home building and inventory accumulation. During the last quarter of 1955, inventory was accumulated at the rate of $5 billion a year--nothing alarming, but significant.

Much of this accumulation was in the auto field. Inventory levels in many industries have not been satisfactory. Companies with an increased level of sales have not been able to build up inventory to support these volumes.

If sales are to continue at a high level, then this would be the period to acquire any inventory needed. If there is to be a downturn, natural decision would be to level off, or even cut.

* * *

PLANTS EXPAND AT RECORD RATE

Biggest single factor in sustaining the boom continues to be industrial expansion. First quarter of this year will be more than 20% ahead of the rate last year, and the rate at which new projects are being put underway leaves little question that for the year, industrial construction will more than offset any drop in single home building.

Home improvement campaign launched by the contractors—but backed up by the materials and building products manufacturers—will also tend to offset a lesser rate of housing starts.

Still a third factor that could and will be brought into play in the event that the new housing starts drop too sharply is a further easing of credit as it affects home buying.

Government was quick to bring back the 30-year mortgage for GI and FHA, and further adjustments will be almost automatic if starts go too low.

* * *

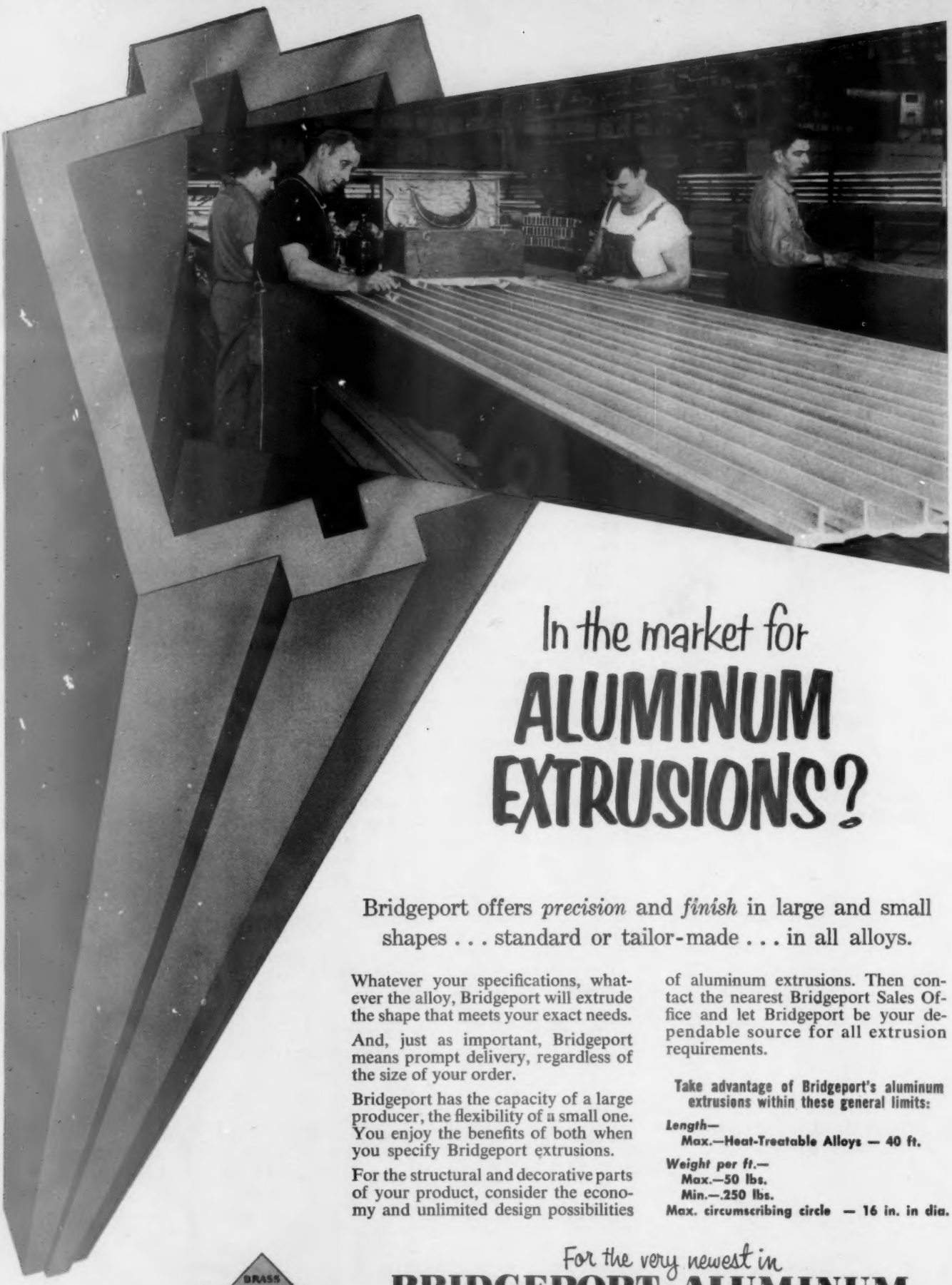
ATOM COMING CLOSER TO INDUSTRY

Industry has been moving into the atomic developments field with a good deal of caution, recognizing the hazards of costly experiment—at the same time seeking to keep abreast of developments.

Government policy has been to release more information, and procedures and rules for the release of classified, as well as unclassified, information have been issued.

Question for purchasing agents is whether the information now available is directly useful to them—especially as access to confidential data is surrounded by considerable red tape.

There is now being released a large volume of unclassified data, covering a broad area, ranging from nuclear power to use of radioactive isotopes.



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For More Information Circle No. 164 on Inquiry Card—Page 17

HOW TO GET ATOM DATA

In addition to this unclassified data, a large volume of material is being made available which is confidential—also data which is of a secret or restricted category.

Purchasing agents might well consider that their function logically suggests the need of being fully informed on nuclear energy data and developments in research that affect a broad range of materials and products.

This secret and confidential data is not an unmixed blessing. It entails obligations and red tape, and there is the possibility that the benefits derived would not warrant the effort called for.

* * *

WHAT'S IN ATOMICS FOR THE P. A.

Benefits roughly are that in getting access to classified and secret data, the purchasing agent and his company (1) can receive research and technical data of a classified and secret nature, (2) will get confidential briefings on developments in the atomic field, and (3) will be able to have contact with other individuals and companies which have been similarly cleared to obtain such material.

Disadvantages are that (1) much of the data available on a confidential and secret basis will have little application to the specific interests of the individual, (2) having received restricted data, the receiver must see to it that it is kept in a safe place—"a cleared facility"—and that it does not get into uncleared hands, and (3) the continuing problem of red tape with regard to possessing classified material.

* * *

AEC SAYS COME AND GET IT

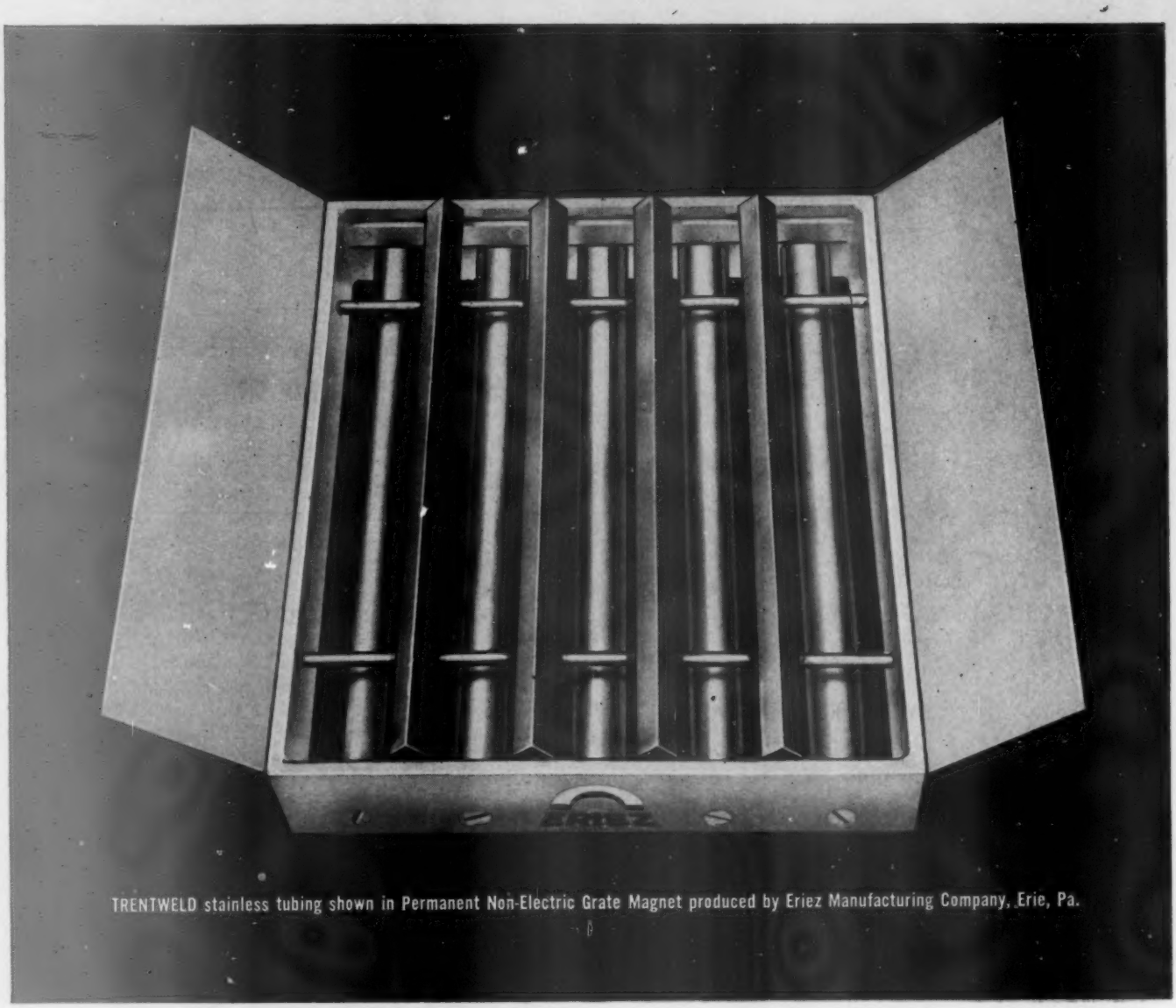
How to get such data? Procedure is fairly simple. A company or an individual in a company merely applies for an "access permit," making application to the Director of the Division of Civilian Application, Atomic Energy Commission, 1901 Constitution Ave., Washington 25, D.C.

AEC supplies the applicant with forms to be filled out to justify the release of restricted data. There are two types of clearances; "L" clearance for access to "Confidential" material, and "Q" clearance for "Secret" material.

Based on the data supplied in the application forms, AEC will determine what type of clearance will be needed to fill the requirements of the individual or company for information.

Once an access permit has been granted, then the individuals who are to be cleared are investigated. While this process of clearing the individuals goes on, the holders of the permit get a large package containing lists organized by subject matter and referring to more than 13,000 unclassified technical reports and other material. This material is available in 47 depository libraries which carry complete files on all unclassified materials. (For specific locations contact AEC's Division of Civilian Application.)

After the permit holder's personnel and facility have been cleared to receive classified information, he receives a second package containing a set of the monthly abstract journal, "Civilian Application of Atomic Energy," covering the Confidential reports available on sale, as well as copies of the Confidential "AEC Declassification Guide," and "Fair Prices for Nuclear Materials." For permit holders granted "Secret" access, the package also includes issues of a second monthly abstract journal, "Secret Reports for Civilian Application."



TRENTWELD stainless tubing shown in Permanent Non-Electric Grate Magnet produced by Eriez Manufacturing Company, Erie, Pa.

how TRENTWELD stainless tubing traps "tramp iron" in product flow...

As free-flowing products such as chemicals, grains, sugar or spices flow through this separator unit, large and small iron contamination is seized by powerful magnets and held firmly to the five stainless steel tubes.

This is a unit that's normally given long, hard use. That's why TRENTWELD stainless steel tubing is chosen to house the Alnico V magnetic elements. For stainless resists abrasion and corrosion . . . its smooth surface offers a minimum of resistance to product flow . . . and stainless is strong—lasts indefinitely. What's more, stainless is the easiest of metals to keep clean and sanitary.

And equally important to you is the fact that TRENTWELD is made by *tube mill specialists*—by the new, patented *Contour-Weld** Process. That means stainless pipe or tubing with a smoother I.D., free from any weld bead or undercut.

So when you need stainless or high-alloy pipe or tubing, make sure it's TRENTWELD. You can't buy better!

*Contour-Weld is the trade mark of the Trent Tube Company for its processes of welding pipe and tubing which is protected under U. S. Patent 2,716,692.

TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

For More Information Circle No. 165 on Inquiry Card—Page 17

SPECIAL SERVICE FOR READERS

You will want additional information about the equipment, materials, services or methods described or advertised in this issue of PURCHASING.

As a special service, our Reader Service Department will gladly and promptly arrange to have manufacturer's literature regarding any item in this issue sent directly to you.

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information for your catalog files

DATA ON ELECTRICAL SPECIALTIES

Catalog No. 84 (52-pages) groups electrical specialties under 3 major headings, supplying technical information on: switches, lampholders and lamp guards with many photos & diagrams.

McGill Mfg. Co., Inc.

Circle No. 1 on Inquiry Card—Page 17

RUBBER PRODUCTS FOR INDUSTRY

Full details are supplied on sizes, weights and applications of a line of hose, belting, packing, molded and lathe-cut goods and mats in a 72-page catalog.

Hamilton Rubber Mfg. Corp.

Circle No. 2 on Inquiry Card—Page 17

USING AIRCRAFT STEEL?

A 72-page booklet gives condensed information on Army, Navy and Government aircraft steel specifications. It also shows sizes, shapes and qualities of aircraft alloy and stainless steels.

Joseph T. Ryerson & Son, Inc.

Circle No. 3 on Inquiry Card—Page 17

HOW TO SELECT BALLASTS

A 12-page catalog is a selection guide covering a complete line of fluorescent lamp ballasts. The bulletin, GEC-983G, contains wiring diagrams for circuits and electrical specifications.

General Electric

Circle No. 4 on Inquiry Card—Page 17

ROLLER CHAINS FOR POWER TRANSMISSION

Included in the 148 pages of book No. 2457 is detailed engineering information on the selection and installation of steel roller chain for power transmission and conveyor service.

Link Belt Co.

Circle No. 5 on Inquiry Card—Page 17

MANY TYPES OF GAGES

Complete with over 40 pages of engineering data and illustrations, catalog No. G55 supplies instructions for ordering and using various types of gages for checking dimensions and tolerances.

Threadwell Tap & Die Co.

Circle No. 6 on Inquiry Card—Page 17

SPLICING AND FITTING WIRE ROPE

Detailed information on splicing and fitting wire rope, including making a tuck, breaking down a strand, blocking and serving, etc., is contained in a 32-page, illustrated, 2-color brochure.

E. H. Edwards Co.

Circle No. 7 on Inquiry Card—Page 17

SPECIAL STEELS FOR INDUSTRY

A 16-page booklet gives details on stainless steels, electrical materials, Carmet carbides and various tool steels. Numerous charts furnish analysis findings. Fabrication data is given.

Allegheny Ludlum Steel Corp.

Circle No. 8 on Inquiry Card—Page 17

FABRICATING METAL POWDER PARTS

Bulletin No. 2 lists the uses of metal powders in manufacturing various industrial products. It illustrates many of the intricate mechanical and electrical parts made from them.

Plastics Metals, Div., National-U.S. Radiator Corp.

Circle No. 9 on Inquiry Card—Page 17

SLINGS HANDLE HIGHLY POLISHED PARTS

Gripper woven wire slings form the text of an illustrated catalog. A section is included on slings covered with Neoprene or plastic for handling, without marring, highly finished material.

Cambridge Wire Cloth Co.

Circle No. 10 on Inquiry Card—Page 17

DETROIT PUBLIC LIBRARY

catalog files

FURNACE PRODUCTS

Refractory products for industrial, foundry and steel mill furnaces are covered in a 32-page catalog (Form No. 69) illustrated in 2 colors. A valuable material application chart is included.

Plibrico Co.

Circle No. 11 on Inquiry Card—Page 17

IF YOU HAVE HIGH-HEAT SEALING PROBLEMS

A 2-color, 8-page bulletin, No. AD 147, describes a line of silicone rubber products for sealing or gasketing under high heat conditions or if flexibility of sealing is needed at low heat.

Garlock Packing Co.

Circle No. 12 on Inquiry Card—Page 17

PARTS FOR ELECTRIC MOTORS, ETC.

The first complete compilation of genuine controller renewal parts for all types of electric apparatus and motor controls is contained in catalog No. 55. Full specifications are supplied.

Brownell Distributors, Inc.

Circle No. 13 on Inquiry Card—Page 17

STEPPING UP IN-PLANT EFFICIENCY

"Airtube On Target" is a 50-page, multi-colored, hard covered book describing several sizes of airtube systems, switch systems, and carriers available for in-plant transport of records, etc.

Lamson Corp.

Circle No. 14 on Inquiry Card—Page 17

APPLYING PROPER CABLE TO SPECIFIC JOB

Heat-resistant cables are covered in a 48-page data book, No. H-463. It includes dimensional tables for power and control cable for direct burial and duct use and hints on cable selection.

Okonite Co.

Circle No. 15 on Inquiry Card—Page 17

WHAT BAKELITE RESINS, PLASTICS CAN BE USED FOR

Properties of over 50 Bakelite plastics and resins are set forth in a 12-page booklet. Information is given about their ability to be formed or processed in manufacturing operations.

Bakelite Co.

Circle No. 16 on Inquiry Card—Page 17

METAL STAMPINGS FOR QUALITY PRODUCTS

A four-page brochure illustrates facilities for fabricating high quality metal stampings for the automotive, radio, electronic and aircraft industries. Engineering consultation is supplied.

Universal Specialties Co.

Circle No. 17 on Inquiry Card—Page 17

FITTINGS FOR WIRE ROPE AND CHAIN

Catalog No. 950-1 (28-pages), profusely illustrated with product pictures, includes engineering data and charts for many types of fittings for wire rope and chain, in which safety is stressed.

Thomas Laughlin Div., American Hoist & Derrick Co.

Circle No. 18 on Inquiry Card—Page 17

CARE & MAINTENANCE OF MULTI-V BELTS

A 14-page illustrated manual on industrial V-belts covers following topics: designing the new drive; double matching installation; how V-belts grip; tension; alignment; how to clean and store.

B. F. Goodrich Co.

Circle No. 19 on Inquiry Card—Page 17

INDUSTRIAL EQUIPMENT FOR STORAGE, ETC.

A closely printed, 16-page, 3-color catalog lists several hundred sizes and types of equipment for industrial storage and maintenance. Descriptions are accompanied by clear-cut photographs.

Precision Equipment Co.

Circle No. 20 on Inquiry Card—Page 17

NEW USES FOR CLAD METALS

A 30-page book contains a wealth of technical information about new uses of copper clad steel or steel clad copper products in radio, electronics, aircraft, and metal working industries.

Joseph Kinney Co., Inc.

Circle No. 21 on Inquiry Card—Page 17

THE RIGHT CASTER FOR THE JOB

Casters are illustrated and described by load rating, wheel size, etc., in a condensed reference file folder. It serves as a guide to proper selection of casters by the job to be done.

Faultless Caster Corp.

Circle No. 22 on Inquiry Card—Page 17

STOP PLANT SKIDDING ACCIDENTS

How to reduce hazards of skidding accidents by installing non-absorbent, permanent abrasive grating with greater wear resistance than steel is covered in 3-color, catalog No. R-655 (6pp).

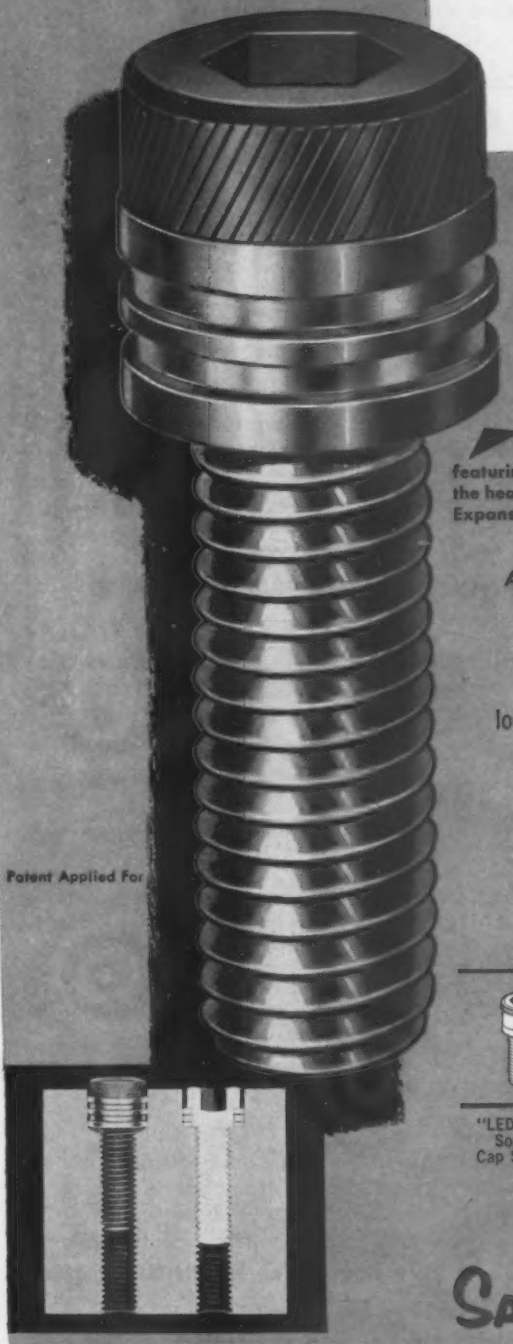
Reliance Steel Products Co.

Circle No. 23 on Inquiry Card—Page 17

Circle Card Opposite Page 17
to Obtain These Catalogs
Additional Catalogs on Page 20

First it was LED-LOK ... now to supplement Led-Lok here's a brand new locking fastener that...

VIBRATION
WON'T LOOSEN!



Patent Applied For

HOW SAF-LOK SCREWS WORK (actual cutaway photo). SAF-LOK Screw is pre-assembled. After drawing hand-tight, the wrench is used, causing the expansion insert to spread and keep the screw permanently tight. Insert is bronze, will never score the screw cavity.

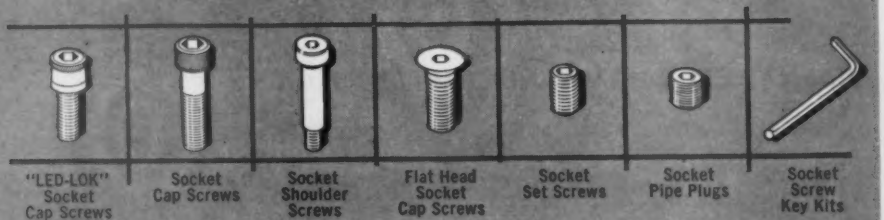
Blue Devil SAF-LOK

featuring the heat-proof Expansion Insert

SOCKET SCREWS

Available in Socket Cap Screws • Shoulder Screws • Flat Head Socket Screws

BLUE-DEVIL SAF-LOK SOCKET SCREWS will never vibrate or shake loose when drawn up tight. They make an absolute seal against oil, water, gas and air ... form an effective locking device for use in oversize counterbores. The SAF-LOK Insert is bronze, not affected by heat and safe for use with food equipment. Wide range of SAF-LOK styles and sizes.



Socket Screws Exclusively!

SAFETY SOCKET SCREW COMPANY

6502 North Avondale Avenue • Chicago 31, Illinois

WRITE TODAY for sample SAF-LOK Socket Screws. No obligation!

SOLD ONLY THROUGH AUTHORIZED INDUSTRIAL DISTRIBUTORS

For More Information Circle No. 166 on Inquiry Card—Page 17

catalog files

WHEELS FOR ORDINARY GRINDING

Catalog No. 5E is a specification selector that aids the proper choice of grinding wheels for the more common operations. All types of abrasive wheels, resinoid and vitrified, are listed.

Abrasive & Metal Products Co., Peninsular Grinding Wheel Div.

Circle No. 24 on Inquiry Card—Page 17

CLAMPS, PLIERS, WRENCHES

Bound into a three-color file folder for easy reference, a 70-page catalog contains pictures, handy template drawings and descriptions of a line of hand and air-operated clamping devices.

Lapeer Mfg. Co.

Circle No. 25 on Inquiry Card—Page 17

ELECTRIC MOTORS FOR WIDE INDUSTRIAL USES

Bulletin No. 1700 includes photos and information on a line of open drip-proof, as well as enclosed and explosion-proof electric motors conforming to N.E.M.A. standards. There are cut-away views.

The Louis Allis Co.

Circle No. 26 on Inquiry Card—Page 17

AIR CYLINDERS, VALVES, INDEXING TABLES

Bulletins, spiral-bound into a master catalog, describe a range of valve-in-head, single and double ended cylinders; solenoid, pilot and hand air valves; spring return clamp & 3 feed tables.

The A. K. Allen Co.

Circle No. 27 on Inquiry Card—Page 17

WIDE VARIETY OF GALVANIZED WARE

Capacities, dimensions and shipping weights of a line of galvanized ware are included in a 12-page catalog. There are color photos of pails, wastebaskets, utility tubs, sprinklers, funnels, etc.

Jones & Laughlin Steel Corp., Container Corp.

Circle No. 28 on Inquiry Card—Page 17

CUTTING UNLIMITED VARIETY OF STEEL SHAPES

A gas cutting machine, operating on the pantograph principle and utilizing up to 8 cutting torches to cut a variety of shapes from steel plates, forgings, etc., is described in catalog 804A.

Air Reduction Sales Co.

Circle No. 29 on Inquiry Card—Page 17

PROTECT WORKERS FROM ACID BURNS

Acid and caustic resistant industrial apparel of orlon and dynel to reduce danger from spattering and spilling of acids in industrial plants forms the subject of a 16-page catalog.

Workon, Inc., Dept. A.

Circle No. 30 on Inquiry Card—Page 17

"FATIGUE-PROOF" STEEL

A 20-page, 2-color brochure describes a high strength free machining steel bar, with minimum distortion, while eliminating heat treating problems. Tables give chemistry and properties.

La Salle Steel Co.

Circle No. 31 on Inquiry Card—Page 17

PORTABLE ENGINE TOOLS DESCRIBED

Catalog No. 32 describes and illustrates in 63 pages a line of portable gasoline engine tools: chain saws, generators, pumps, conversion sprockets, etc. Electric & pneumatic saws are also listed.

Mall Tool Co.

Circle No. 32 on Inquiry Card—Page 17

FRACTIONAL HOSEPOWER D-C MOTORS

Illustrated bulletin No. GEA-6068 covers a complete line of fhp d-c motors and equipment for d-c and built-in use. Included are typical applications, product ratings and specifications.

General Electric

Circle No. 33 on Inquiry Card—Page 17

EFFECTING QUICK, PERMANENT FASTENING

A 4-page, 2-color booklet describes how to attain economical, permanent fastening with rivets, designed for use with any model of tubular rivet setting machine. Tables recommend applications.

Townsend Co.

Circle No. 34 on Inquiry Card—Page 17

SCREWDRIVERS, CHISELS, SPECIALTY TOOLS, ETC.

Forty multi-colored pages teeming with striking illustrations deal with a complete line of hand tools, screwdrivers, nut drivers, wood chisels, pliers, kits, specialty tools, etc.

Vaco Products Co.

Circle No. 35 on Inquiry Card—Page 17

WHICH BUFFING, POLISHING COMPOUND TO USE

Over 100 buffing and polishing compounds for use with 12 different metals, plastics and hard rubber are classified and described in bulletin Co-103. Thirty-five photos illustrate various compounds.

Hanson-Van Winkle-Munning Co.

Circle No. 36 on Inquiry Card—Page 17

Circle Inquiry Card Opposite Page 17

to Obtain These Catalogs

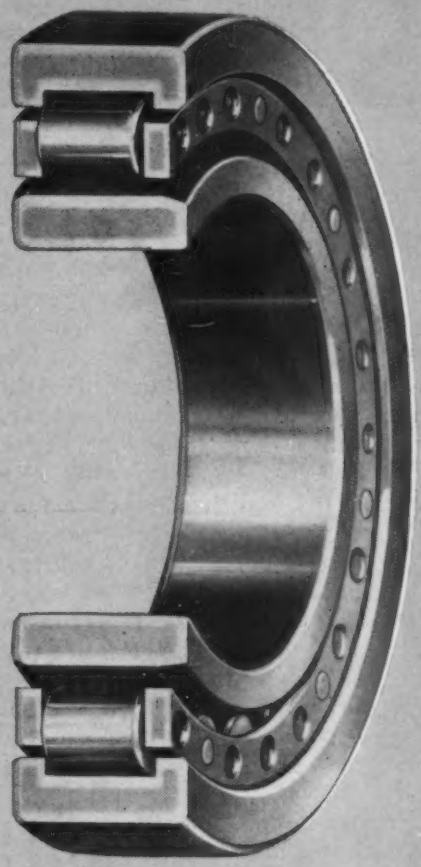
No job too little . . . or none too tough for BOWER STRAIGHT ROLLER BEARINGS

A complete line, a wide range of sizes to fit your specific needs

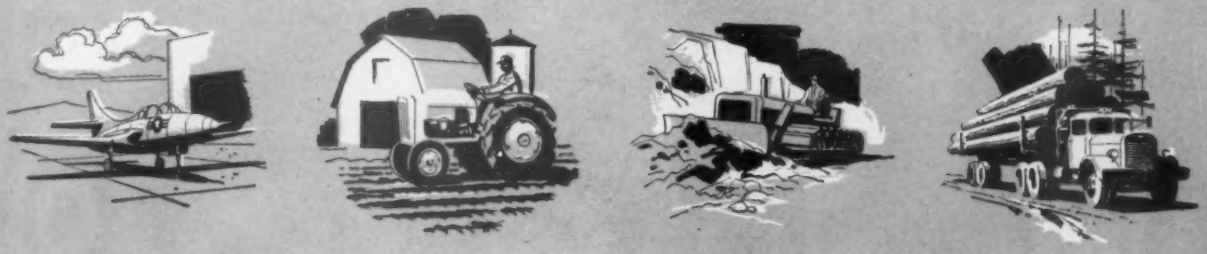
Square pegs weren't made for round holes. And aircraft bearings aren't built for farm equipment, either. That's why Bower designs a complete line of straight roller bearings—a line broad enough to meet any product requirement.

Jet planes break the sound barrier . . . need bearings that'll keep pace. So Bower aircraft bearings are engineered with exactness and precision to tolerances held to millionths of an inch. Bower tractor bearings, on the other hand, are built for ruggedness . . . to take heavy loads and real punishment, day after day, month after month.

Bower Roller Bearings are proved performers *in every field,* for *any* straight roller bearing application. From motors to earthmoving equipment, they're on the job—cutting maintenance and downtime, setting new standards of efficiency and economy. Get details on the *complete* line from a Bower engineer.



Tapered, Straight and Journal Roller Bearings for every field of transportation and industry



BOWER ROLLER BEARINGS

BOWER ROLLER BEARING DIVISION • FEDERAL-MOGUL-BOWER BEARINGS, INC., DETROIT 14, MICHIGAN

For More Information Circle No. 167 on Inquiry Card—Page 17

suppliers in the news

Fred S. Hudson has been named general manager of sales for the heating and air conditioning division of **National-U. S. Radiator Corp.**, Johnstown, Pa. He had been in charge of marketing operations in the Pittsburgh, Cincinnati and Cleveland branch sales offices.

The Hammer-Dahl Co., Providence, R. I., has appointed the E. B. Miller Co., St. Louis, as sales representative in that area.

Hallowell Collar Division, Standard Pressed Steel Co., Jenkintown, Pa., has announced the appointment of John W. Breitmayer sales manager. He had been assistant sales manager of the company's Unbrako line of socket screw products, dowel pins and pressure plugs.



J. W. Breitmayer

Three zone managers of electric tool and SpeedTool sales have been appointed by **Thor Power Tool Co., Aurora, Ill.** J. P. Stine, now east coast zone manager, will headquarter in Newark and cover the New York, Boston, Buffalo, and Newark branch territories. C. B. Baron, new west coast zone manager, will headquarter in Los Angeles and cover Los Angeles, San Francisco, and Seattle territories. R. J. Burch, southeastern zone manager, will headquarter in Birmingham and handle the states of Mississippi, Tennessee, Alabama, North and South Carolina, Georgia, Florida, and most of Louisiana.

John T. Harrison, director of board and corrugated container sales for **Union Bag & Paper Co., New York**, has been appointed a vice president.



J. T. Harrison



L. P. Baker

Lawrence P. Baker is now sales manager of the **Pressed Metal Division, The Stanley Works, New Britain, Conn.**

Jacobsen Mfg. Co., Racine, Wis., has appointed Charles A. Livesey as vice president in charge of sales.



C. A. Livesey

Can it be Welded?



SEND US THE PRINT— WE'LL DO THE REST!

Often the best and most economical way to fabricate circular components — even complicated assemblies — is by welding. Sometimes it is the only way. But how can you be sure that welding is the practical production solution to a specific problem? How can you be sure that some new technique hasn't been developed recently at American Welding that could make welding and fabricating of a special alloy possible?

Here at American Welding is a well-staffed Industrial Products Division ready to serve you. Take advantage of this service today. Simply send us blueprints and specifications. We will be glad to study your particular problem and, based on 37 years' experience, advise you as to whether welding would be your best solution.

THE AMERICAN WELDING & MFG. CO.
460 DIETZ ROAD • WARREN, OHIO

Free Facilities Catalog

Find out what American Welding can do for you. Send for your copy today.

AMERICAN WELDING

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suppliers

Federal Telephone and Radio Co., Clifton, N. J., a division of International Telephone and Telegraph Corp., has appointed Pat J. Morrisey as sales manager for the Transformer Department.

Joseph T. Ryerson & Son, Inc., Chicago, has announced changes in sales assignments in its New York steel service plant. John J. Hauptly is now acting manager of the inside sales department. Succeeding him as manager of alloy steel sales is Richard L. Smith. Edward J. Byers has been named manager of tubular products and cold finished bar sales. And, Robert F. Philpott is now a sales representative for the Ryertex-Glyco department.

The Pittsburgh Corning Corp., Pittsburgh, has named E. J. Barnell as manager of Foamglas low temperature sales.

John Porter is now a sales representative for **Baldwin-Lima-Hamilton Corp., Philadelphia.** He will cover Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

Alan Wood Steel Co., Conshohocken, Pa., has appointed T. D. Owens as manager, foundry coke and pig iron sales. W. J. Patterson has been named manager, industrial coke and chemical sales.

Additional "Suppliers in the News" will be found following the Industrial Development section

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Rivett Lathe & Grinder, Inc., Boston, has appointed the H. A. Jones Co., Dayton, as representative in the Dayton-Cincinnati area.

Three sales appointments have been announced by the **Delta Power Tool Division, Rockwell Mfg. Co., Pittsburgh.** George E. Rockwell, eastern regional sales manager for the past five years, has been named to the newly-created post of sales manager-specialty products. Thomas C. Mortimer, formerly southern regional sales manager, succeeds Mr. Rockwell as eastern regional sales manager. Warren B. Sherman takes over the post of southern regional sales manager.

G. Raymond McGruther has been named director of sales for the **Duro-Test Corp., North Bergen, N. J.**

Columbia-Southern Chemical Corp., Pittsburgh, has established a new district sales office at Houston, Texas. C. K. Ballard is district sales manager of the new office, and W. J. Bramblett is assistant district sales manager.

Vulcan Crucible Steel Co. Division, H. K. Porter Co., Inc., Aliquippa, Pa., has named two distributors in the metropolitan New York and New Jersey area. They are: Grammer, Dempsey & Hudson, Inc., Newark; and Passaic County Steel Service, Inc., Paterson.

J. C. Van Arsdell is now manager of government sales and specifications for **Erie Resistor Corp., Erie, Pa.**

The Industrial Lift Division, Globe Hoist Co., Philadelphia, has named Wallace G. Smith, Jr., as sales manager.

Cecil Isbell has been named sales manager, **Seating Division, Safway Steel Products, Inc., Milwaukee.**

The appointment of George L. Ogdin, Jr., as general sales manager has been announced by the



G. L. Ogdin, Jr.

Fulton Sylphon Division, Robertshaw-Fulton Controls Co., Knoxville, Tenn.



T. O. Carson

Thomas O. Carson has been named Pittsburgh district sales manager for the **Meter and Valve Division, Rockwell Mfg. Co., Pittsburgh.**



D. M. Roney, Jr.

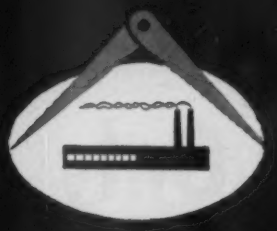
David M. Roney, Jr., has been appointed assistant sales manager of **Hanson-Van Winkle-Munning Co., Matawan, N. J.**

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Using

DU PONT ELASTOMERS

NEOPRENE-HYPALON®



in Industry

Brine, animal fats no threat to durable NEOPRENE truck tires

Hand-truck tires are subjected to such severe exposure conditions in a meat-packing plant that conventional rubber tires have to be replaced in a matter of months. They are constantly rolling over brine, animal fats and blood . . . in fact, the floors are so greasy in places that salt is sprinkled on them to prevent slipping.

The C. D. Moyer Co. of Silverdale, Pa., has solved its tire replacement problems with the help of neoprene. Here is the report of the company's plant superintendent. "Rubber tires used to swell up and jam the wheel within a few months. We've had no trouble at all since switching to neoprene *8 years ago*." Neoprene tires are now standard at Moyer's, not only in the lard and meat-processing area, but even on the package hand truck in their warehouse.

Neoprene offers you cost savings wherever operating conditions demand extra resistance to oil, grease, chemicals, heat and outdoor exposure. Mail the coupon for further information about neoprene.



NEOPRENE TIRES have been in service 8 years in this meat-packing plant. Rubber tires previously used lasted only a few months.

HYPALON doubles service life of belt exposed to 300°F.

Previous belt life was maximum of 3 months

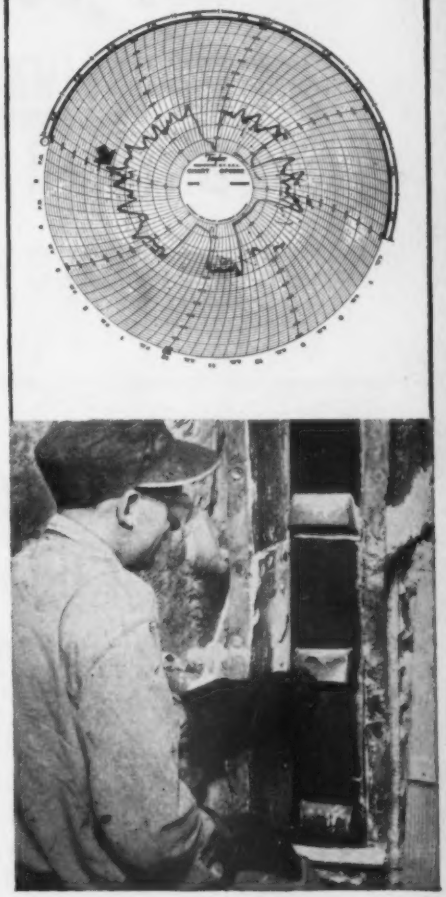
Engineers at a large chemical plant were confronted with the problem of finding an elevator belt that would resist extremely high temperatures. The belt had to lift hot salt from a rotary drying kiln to a loading platform. Average temperature of the salt was 300°F. so that even the best rubber belts were lasting only three months. Heat caused embrittlement and cracking of the rubber where the monel buckets were attached to the belt. Soon the belt ruptured.

The answer to the problem was a specially designed hot-materials belt covered with HYPALON, Du Pont's new synthetic rubber. The HYPALON-covered belt lasted six months—twice as long as previous belts—despite the fact that the belt is fully enclosed and in operation about 80 hours a week.

This is just one example of the *extreme service conditions* for which HYPALON is especially suited. It demonstrates that HYPALON, compared to other kinds of rubber, shows unusual resistance to hardening at elevated temperatures (250°F. to 350°F.).

OTHER ADVANTAGES

HYPALON also is completely resistant to ozone and has excellent resistance to strong oxidizing agents. In addition, it resists abrasion, weathering and flex cracking. For these reasons, HYPALON can help reduce plant maintenance costs.



HYPALON-covered elevator belt resisted salt temperatures averaging 300°F. for six months. Chart above shows a peak temperature of 518° F. (arrow).

DU PONT
REG. U. S. PAT. OFF.

HYPALON *is a registered trademark of E. I. du Pont de Nemours & Co. (Inc.)*

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*



Please send further information and add my name to the mailing list for your free publications, the "Neoprene Notebook" and "Facts about HYPALON®," which show how the Du Pont elastomers are used to cut maintenance and replacement costs, improve production.

E. I. du Pont de Nemours & Co. (Inc.)
Elastomers Division, Dept. PC-4
Wilmington 98, Delaware

Name_____ **Position**_____

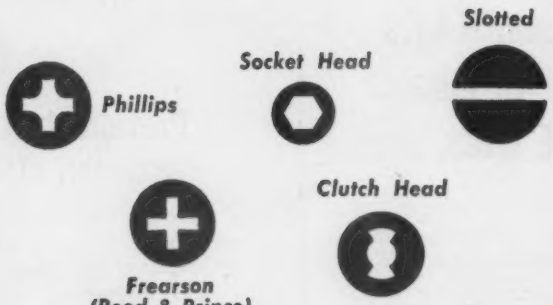
Firm_____

Address_____

City_____ **State**_____

Only APEX has all the tools for every fastener need..!

You can drive not just one but five types and all sizes of screws





not just ONE but a full line of screwdriving tools

Select the type, size and make of screws best fitted to your fastening requirements . . . choose the method of operation that meets your particular needs . . . then ask Apex for the screwdriving tools to help get the job done faster, better, more economically.

Apex—the authority on screwdriving—offers tools to fit all well-known makes of air, electric or spiral drivers . . . standard and magnetic bit holders . . . shanks and reversible sockets for use on hex head sheet metal screws . . . tools for manual or power tool use.

Write, on your company letterhead please, for Catalog 21 (Standard Screwdriving Tools); Catalog 25 (Magnetic Screwdriving and Nut Running Tools); Catalog 29-R (Standard Nut Running Tools).

BIT HOLDERS and INSERT BITS

Originated and pioneered by Apex. Holders have exclusive, patented retaining lock ring to prevent bit from pulling out during driving operation.

plus

POWER BITS, COMBINATION HAND DRIVERS, HAND BRACE BIT HOLDERS, FEMALE SQUARE DRIVE BIT HOLDERS . . . HAND DRIVERS, HAND BRACE BITS, FEMALE SQUARE DRIVE BITS (Phillips, Frearson, Clutch Head) . . . OFFSET DRIVERS (Phillips, Frearson) . . . FINDER SLEEVE ASSEMBLIES (Slotted).

Ask APEX *for the answer to your fastening problem!*

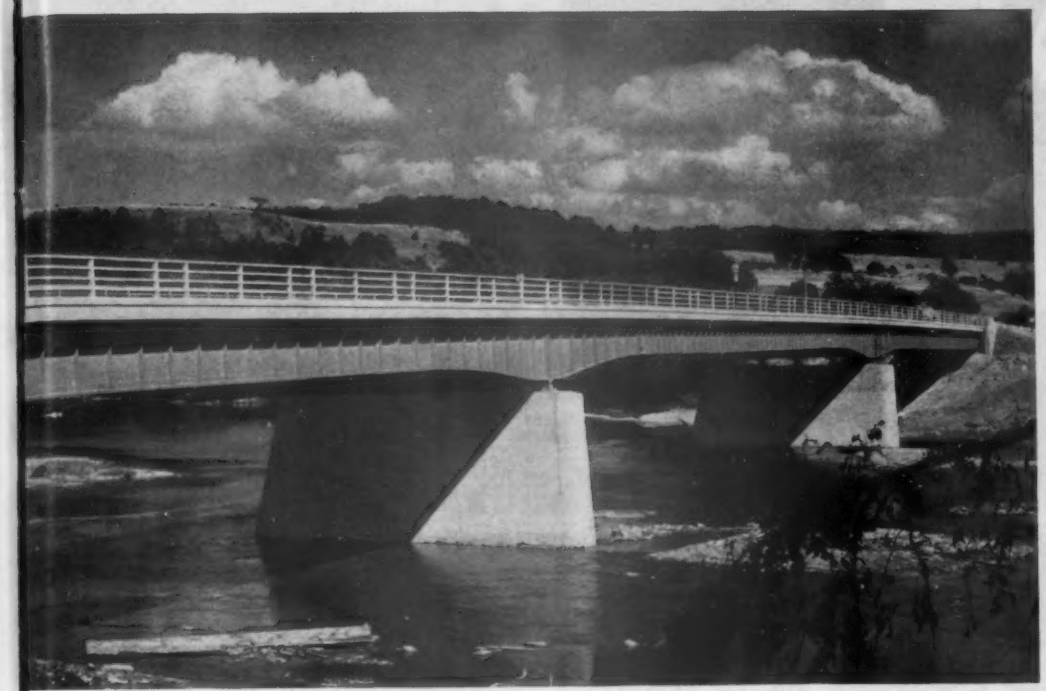
THE APEX MACHINE & TOOL COMPANY

1034 S. Patterson Blvd. • Dayton 2, Ohio

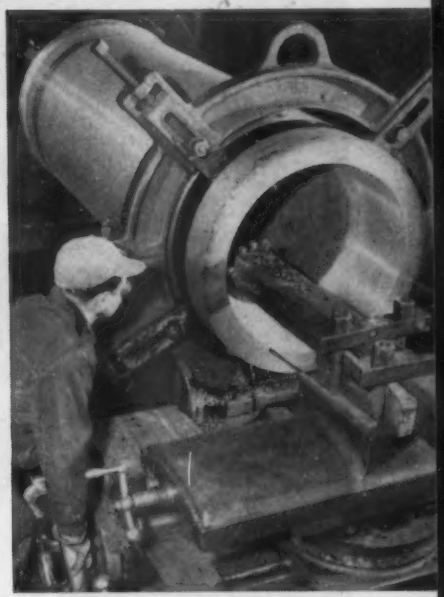
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BARIUM STEEL—active in America's growth



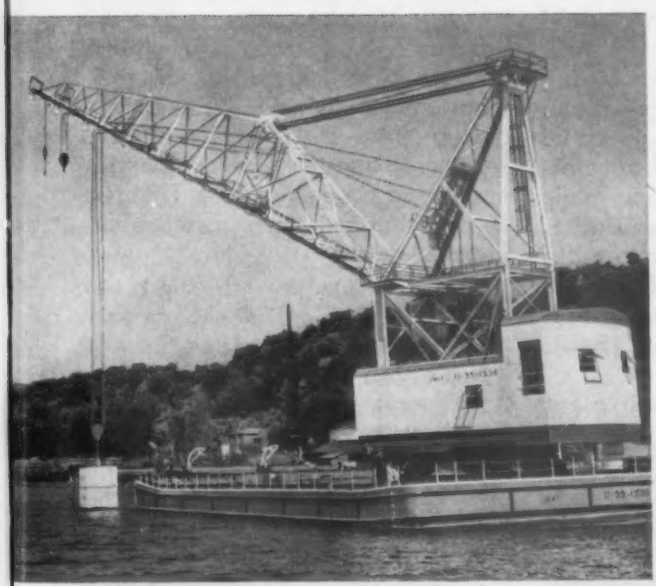
HIGHWAY CONSTRUCTION won't be slowed down by waterways as long as Barium's Phoenix Bridge Company fabricates steel and builds bridges. This handsome 500 foot, 900-ton continuous deck plate girder highway bridge, was built by Phoenix for the New York State Department of Public Works. It spans the Susquehanna River at Bainbridge, New York.





PROCESS PLANT builders shop at Barium, too. This large Gas Scrubber Separater unit (at left) was fabricated by the Plate Division of Barium's Phoenix Iron & Steel Company. Too big to go by railroad, a special truck rig delivered it to the job site at Farrel, Pa.

CHEMICAL INDUSTRIES take advantage of the alert management thinking that has built Barium from 1 to 12 soundly diversified companies in ten short years. Here at Barium's Industrial Forge & Steel Inc., they're rough machining a 7900 lb. carbon steel forged sleeve for a leading chemical concern.



AUTOMOBILE gears, shafts and shifters are pounded out on hammers at Barium's Globe Forge, Inc. Automotive springs, fasteners and stampings come from other Barium companies. For more facts on Barium, write Barium Steel Corporation, 25 Broad Street, New York 4, N.Y.



ARMED FORCES have learned what we mean by Barium's integrated operations. Though the Air Forces' biggest (50-ton design capacity) floating crane bears the nameplate of Barium's Wiley Manufacturing Co., four separate Barium companies pooled talents to produce it. Just one more chapter in "The Barium Story"—complete product listing is in Thomas Register, Section A to Z. 61

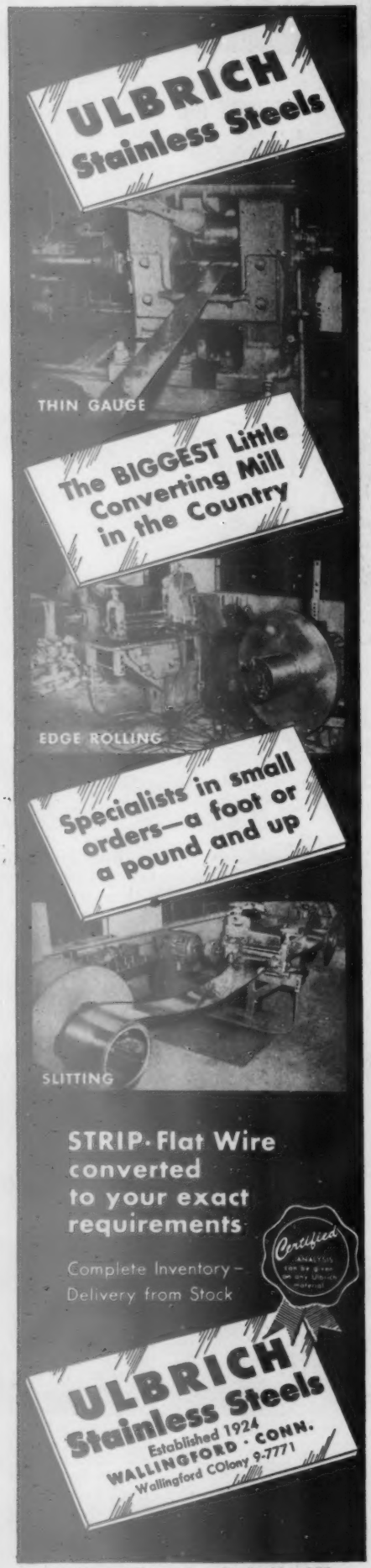
STEEL PRODUCERS
Phoenix Iron & Steel Co. (Plate Div.; Structural Div.; Steel Tube Div.; Blast Furnace Div.)

STEEL FABRICATORS & PROCESSORS
Phoenix Bridge Company • Industrial Forge & Steel, Inc. • Globe Forge, Inc. • The Geometric Stamping Company

12 INTEGRATED COMPANIES
BARIUM
STEEL CORPORATION
WORKING IN STEEL, ALUMINUM, MAGNESIUM, FIBERGLASS

MANUFACTURERS OF END PRODUCTS
Clyde Iron Works, Inc. • Erie Bolt and Nut Company • Bayonne Bolt Corporation • The Cuyahoga Spring Company • Jacobs Aircraft Engine Company • Wiley Manufacturing Company

LIGHTWEIGHT METAL AND PLASTICS
East Coast Aeronautics, Inc.



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f.o.b. . . filosofy of buying

TOO OFTEN, purchasing for local governments is regarded as a political plum or becomes a political football. But increasingly it is being recognized that public purchasing can be among the most useful and important public services. The state or city fortunate enough to have a competent, experienced official handling the service of supply and keeping a firm hand on the public purse strings, doing the job with unquestioned integrity, and rising above political considerations, is loath to let such a man go.

This is dramatically illustrated in the case of Massachusetts P.A. George Cronin, who came to retirement age early this year after 30 years in that office and looked forward to a well earned rest. Major Cronin, a lifelong Democrat and a lifetime career man in purchasing, is justly proud of the fact that his original appointment to the state office was made by Republican Governor Fuller, and that he has subsequently been reappointed by Governors Ely (Dem), Curley (Dem), Saltonstall (Rep), Bradford (Rep), and Dever (Dem).

When his impending retirement was announced, Governor Herter (Rep) promptly stated that if Cronin could be persuaded to continue on the job, the Governor would invoke his emergency powers to waive the mandatory retirement provision. George was persuaded, and the Commonwealth will continue to have the benefit of his fine service, which has been steadfast for three decades under the changing political fortunes of the state, with the complete confidence and endorsement of both major parties.

We congratulate both Massachusetts and George Cronin. The record they share is indeed one to be proud of. He is the oldest State P.A., in length of service, in the nation. He was the first hired employee of the State Commission on Administration, established in 1923. He then had 12 years of experience in buying for the Navy Department and 5 years for the City of Boston, with time out for a distinguished military record in World War I. Today, every one of the 72 employees in his department has been selected, appointed, and trained by him. And that record will stand for many years to come. The next oldest State P.A., in length of service, is another New Englander, Harold Cheney of New Hampshire, who has been in office a mere 20 years.

• •

IN TERMS of appreciated public service in buying, Major Cronin's reappointment is not altogether unique. Only a few months ago, the City of Baltimore waived mandatory retirement age provisions to retain the services of City P. A. Herb Gaston—after a heartwarming testimonial dinner in tribute to the "retiring" buyer. And a year or so ago, the

City of Milwaukee decided it couldn't let P.A. Joe Nicholson retire, regardless of what the yearbooks said. It so happens that these three purchasing men have long been among the active leaders of their profession, widely respected and acclaimed by their fellow buyers. It is encouraging to note that, also, they are not without honor in the communities they serve.

• •

DID YOU ever try to write a specification for a frankfurter? The National Association of State Purchasing Officials, in session at Louisville, Ky., undertook that challenging project and came up with a specification covering four single-spaced typewritten pages telling in minute detail what the buyer expects to get when he orders various types of hamburgers, otherwise known as hot dogs or red-hots. Purchasing agents representing 36 states (and Puerto Rico) agreed on the standards. The others presumably will continue to live more adventurously.

• •

BACK DOOR tactics seem to have an affinity for the long suffering P.A., not only during the business day but in his home life as well according to a recent item in the Gardner (Mass.) *News*. But all back door habits are not necessarily bad. The story reports on the latest accomplishment of Rex, an intelligent, blooded Boxer pooch belonging to P.A. Earle Conners of the O. W. Siebert Company. Rex has learned to ring the front door bell of his residence when he has tired of the great outdoors and wants to come in out of the rain or cold. But the Conners have learned not to answer the bell. For Rex, after rearing up to his full height to push the buzzer, takes off at full speed around the house to make his entrance by the back door, as a well mannered dog should. It's all in character, says his proud owner. Rex is the thoughtful kind of dog who would take off his rubbers before coming into the house on a wet day.

It all adds up!

+ We make the wire cloth we would use for your product... the well-known "NEWARK for ACCURACY" Cloth.

+ We offer more than 75 years experience in wire cloth manufacture and use.

+ We have the facilities for accurately fabricating parts from NEWARK Cloth in small lots or in production quantities to meet your production schedules.

+ We have the skilled workers to do the job.

+ We have experienced engineers ready to work with you in the design of the part to make the most effective and economical use of the wire cloth.

= It all adds up to a service that can produce "quality" wire cloth inserts for you. It is the same service that has brought us many, many repeat orders and one that has been responsible for a steadily growing list of customers.



... and suggests why it will pay you to let us "fabricate" your wire cloth inserts.

NEWARK for ACCURACY

We can furnish wire cloth woven from all commercially used metals. Sizes range from 4 inches (space cloth) to 400 mesh.

Newark Wire Cloth COMPANY

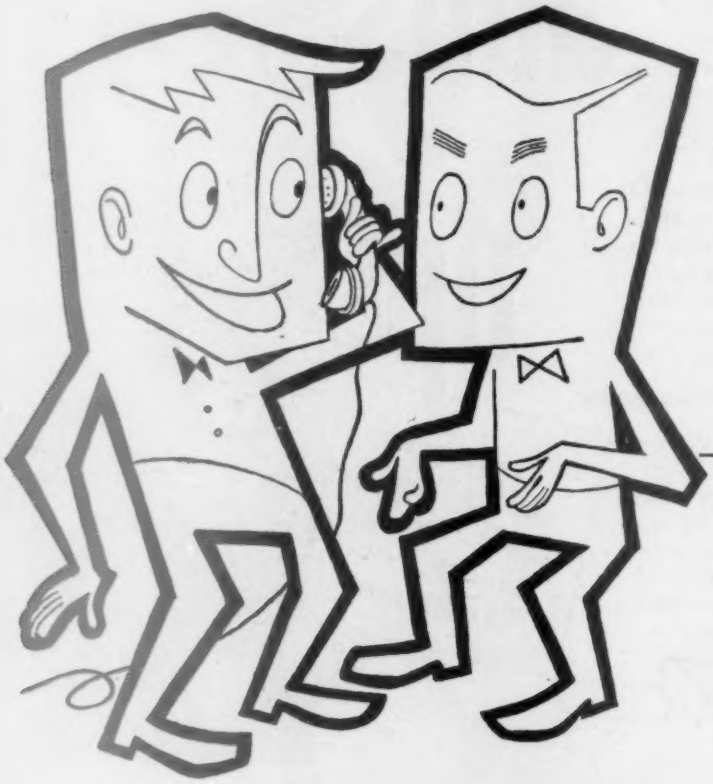
351 VERONA AVENUE • NEWARK 4, NEW JERSEY

For More Information Circle No. 173 on Inquiry Card—Page 17



How come you can get all the coal you want? Our deliveries have been slow!

That's because we buy all our coal from mines on the Chesapeake & Ohio. C & O has more coal cars than any other railroad and keeps close to 99% of them in good order. This ready car supply means an uninterrupted flow of coal to consumers.



How about the coal? Is that as good as the service?

C & O territory has always been known for the superior quality coal it produces. And the C & O fuel service engineer is always ready to help us find exactly the right coal for our particular needs.

P.S.

There's a lot more to buying coal than the cost per million BTU. Why not contact coal producers on the C & O to solve your particular fuel requirements, or write to R. C. Riedinger, General Coal Traffic Manager, Chesapeake & Ohio Railway Co., Terminal Tower, Cleveland 1, Ohio, for the assistance of a C & O fuel service engineer.

Chesapeake and Ohio Railway

WORLD'S LARGEST CARRIER OF BITUMINOUS COAL

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THE NEW STYLE NO. 48-B TOOL GRINDER is used for roughing and finishing large tools that do not require extreme accuracy. Also used for roughing or semi-finishing smaller tools.



THE NEW STYLE NO. 49-A TOOL GRINDER is a heavy-duty model. It is recommended for roughing and finishing large single-point tools or roughing smaller tools.



Simple operation allows quick training of inexperienced help—

There's a new Ex-Cell-O Tool Grinder to fit the needs of every shop, large or small. Designed for simple operation, you can quickly train even inexperienced help to become proficient at tool reconditioning.

Ex-Cell-O Tool Grinders accommodate a wide range of tool sizes and sharpen all grades of carbides, high speed steels, and cast alloys. They feature: sturdy construction, vibration-free operation, generously proportioned work tables, simple and exact angular adjustments, and table adjustment for wheel wear. All models are double end with reversible motors for left and right hand tools.

New Ex-Cell-O Tool Grinders

GIVE YOU THE FINEST CUTTING EDGES





THE NEW STYLE NO. 46-D TOOL GRINDER can be used for finish grinding and also for roughing small and medium tools.

THE NEW STYLE NO. 44-A TOOL GRINDER is a precision finishing grinder. An Ex-Cell-O Precision Spindle drives six-inch plate mounted wheels.

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

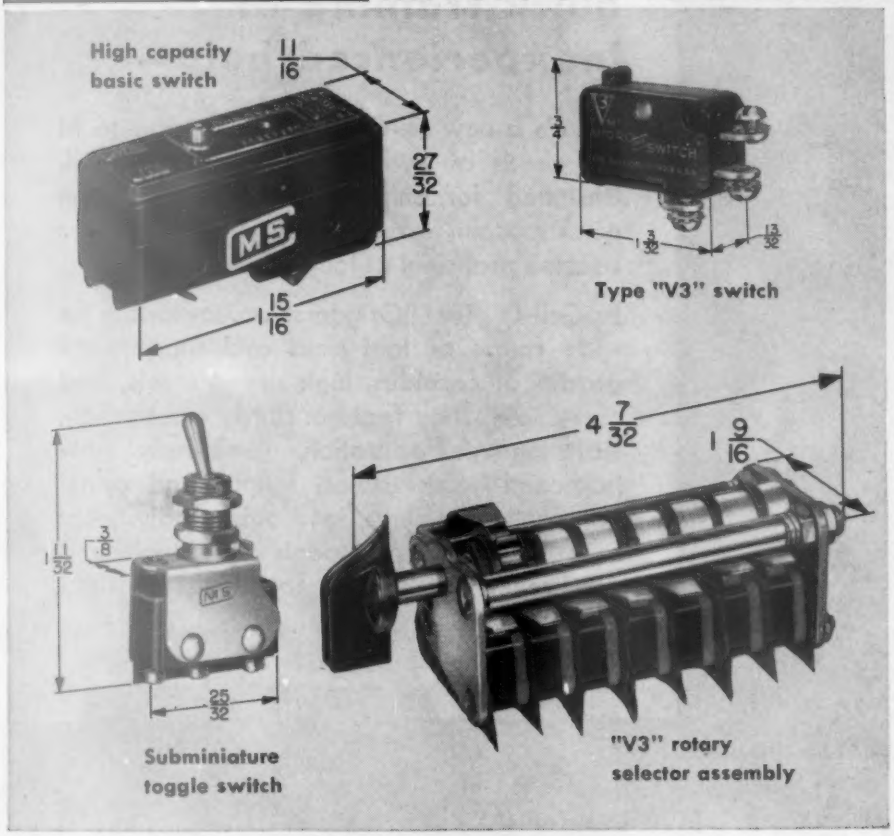
XLO
EX-CELL-O for PRECISION

MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPINDLES
CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHINGS
AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT

56-14

MICRO precision switches

...THEIR USE IS A PRINCIPLE OF GOOD DESIGN



A continuous flow of Precision Switch developments anticipates designer's needs

Whatever the design requirement—whether it calls for unusually small size, unusually high electrical capacity or unusual actuation and circuit arrangement—there is a MICRO precision switch to meet it. That is why designers have long made it standard policy to check with MICRO SWITCH as new needs develop.

Shown here are just a few small, compact switch designs that are typical of MICRO SWITCH development. Each is one of a whole "family" of extremely reliable switches.

Type "V3" Switch. The MICRO SWITCH "V3" line switches have the highest electrical capacity for their size of any switch available. They have been developed to meet the exacting requirements of designers for an extremely small, compact switch without sacrifice of quality. Actuators are available to permit their actuation by cams, slides and other mechanical motion not in line with the switch plunger motion. (Send for catalog 74).

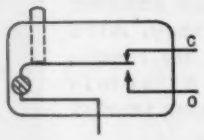
"V3" Rotary Selector Assembly. These assemblies are available with from one to eight switching units and from two to eight detent positions. Light in weight and small in size, these assemblies are well suited for use in electronic and aircraft applications. Many assemblies are available with various camming sequences. (Send for catalog 74).

High Capacity Basic Switch. This switch combines high electrical rating with high inrush capacity. The steady state current rating is 20 amperes, with inrush capacity of 75 amperes on voltages up to 460 volts a-c. These switches are especially useful for handling high inrush currents of solenoids, motors and tungsten lamps. (Send for catalog 62).

Subminiature Toggle Switch. This is one of a number of subminiature toggle switch designs developed for subminiature assemblies. The toggle switch illustrated consists of one MICRO subminiature switch riveted into the stainless steel toggle bracket. The assembly is for single-pole, double-throw service. Double-throw switches can be used "normally open" or "normally closed" by wiring to either the normally open or normally closed terminals. (Send for catalog 75).

Circuit Arrangements

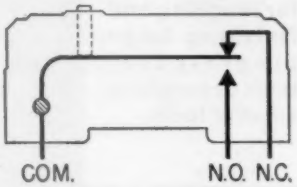
DOUBLE THROW



Type V3 Switch

This switch has a single-pole, double-throw contact arrangement. Electrical rating is: 10 amperes, 125 or 250 volts a-c; ½ ampere, 125 volts d-c; ¼ ampere, 250 volts d-c.

DOUBLE THROW

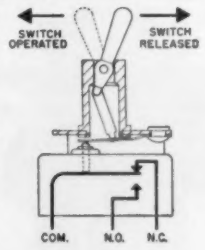


High Capacity Basic Switch

Standard switches are single-pole, double-throw. Electrical rating is: 20 amperes 125, 250 or 460 volts a-c; ½ ampere 125 volts d-c; ¼ ampere 250 volts d-c; 1 H. P. 115 volts a-c; 2 H. P. 230 volts a-c; 10 amperes 125 volts when controlling tungsten filament lamp loads on a-c circuits.

Subminiature Toggle Switch

Contact arrangement is single-pole, double-throw. Double-pole, double-throw assembly, using two subminiature switches is available. Electrical rating is: 5 amperes 125 or 250 volts a-c. The 30 volt d-c rating is, inductive—3 amperes at sea level and 2.5 amperes at 50,000 feet, resistive—4 amperes at sea level and 4 amperes at 50,000 feet, maximum inrush is 15 amperes.



MICRO SWITCH *Engineering Service, experienced in precision switching problems, is available—at the* MICRO SWITCH *branch nearest you. Why not call today?*

MICRO SWITCH

A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

In Canada, Leaside, Toronto 17, Ontario • FREEPORT, ILLINOIS

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WICKWIRE ROPE DISTRIBUTORS WEAR MANY HATS

Wickwire Rope distributors are men who wear many hats. They are at home in the headgear typical of the numerous and varied industries they serve—the marine and fishing trades, the oil fields, construction, logging and many other industries having specialized wire rope needs.

These men aren't hat models—they can wear these hats because of their long experience in the industries they serve. Add to this their intimate knowledge of local conditions and their comprehensive Wickwire Rope stocks, and you'll see that your Wickwire Rope distributor is the man who can be of great help to you.

Yes, your Wickwire Rope distributor is a good man to know. He's quality people handling quality products. Buy your wire rope and wire rope slings from him. You'll find that the many valuable services he offers far outweigh any apparent price advantage you might gain by buying direct.

CF&I WICKWIRE ROPE A CF&I PRODUCT

A PRODUCT OF THE COLORADO FUEL AND IRON CORPORATION

3154

You can set a new High Torque Unbrako self-locking socket set screw and forget it—it stays tight



There are several reasons: the deeper socket which gives you better purchase with the wrench; the rounded socket corners which eliminate the sharp corners where cracks start; the special methods of heat treatment in atmosphere-controlled furnaces; the development of fully formed threads.

Up to 40% higher tightening torque— a new Unbrako feature

RECOMMENDED SOCKET SET SCREW TIGHTENING TORQUES (Inch-Pounds)

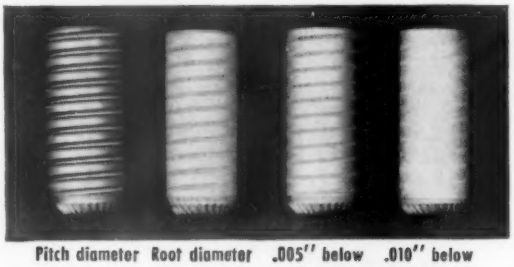
SCREW SIZE	UNBRAKO	SET SCREW B	SET SCREW C	MINIMUM DIFFERENTIAL %
#4	5	3.9	3.5	28
#5	9	7.8	7.4	15
#6	9	7.8	7.4	15
#8	20	14.7	14.5	36
#10	33	26.5	25	25
1/4	87	62	60	40
5/16	165	122	125	32
3/8	290	198	225	29
7/16	430	309	350	23
1/2	620	460	500	24
5/8	1225	1106	1060	11
3/4	2125	1540	1800	18
7/8	5000	3660	4600	9
1	7000	5025	6500	8

ALL UNBRAKOs can withstand higher tightening torques than ordinary set screws. For example, the recommended torque for a ¼" UNBRAKO is 87 inch-pounds—40% greater than that recommended for an ordinary set screw.

These microphotographs illustrate just what fully formed threads do for the new High-Torque UNBRAKO. They make the whole screw stronger. The metal is compressed into the closely knit grain structure that you see. The grain flow follows the contour of the threads. There are no straight lines along which shear can occur. The UNBRAKO retains its flow lines even when ground down to .010" below root diameter. Screws with cut or ground threads lose thread form at root diameter.

You can't buy a better set screw than an UNBRAKO. See your authorized industrial distributor today. Or write STANDARD PRESSED STEEL Co., Jenkintown 31, Pa.

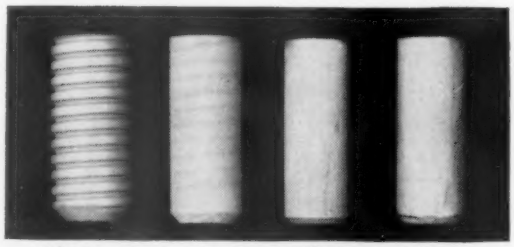
Unbrako Set Screw



Pitch diameter | Root diameter | .005" below root diameter | .010" below root diameter

Fully formed threads make the whole screw stronger. The metal is compressed into a closely knit grain structure. The grain flow follows the contour of the threads. The UNBRAKO retains its flow lines even when ground down to .010" below root diameter. Screws with cut or ground threads lose thread form at root diameter.

Ordinary Set Screw



Pitch diameter | Root diameter | .005" below root diameter | .010" below root diameter

STANDARD PRESSED STEEL CO.

UNBRAKO SOCKET SCREW DIVISION SPS

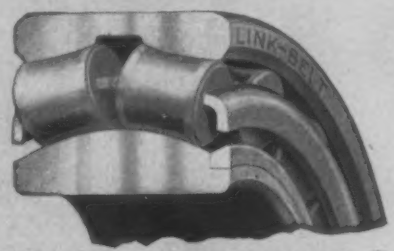
JENKINTOWN PENNSYLVANIA

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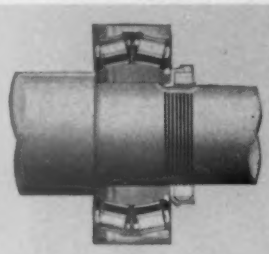
MORE FACTS on why more and more leading manufacturers choose Link-Belt bearings



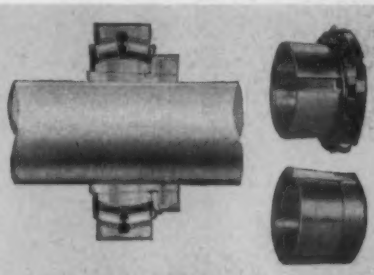
ALLIS-CHALMERS MOTOR GRADER capitalizes on the ability of Link-Belt self-aligning roller bearings to handle high shock loads.



FREE-ROLLING — SELF-ALIGNING. Spherical inner ring is free to align in any direction. Load is distributed over entire roller assuring full load capacity. Destructive edge loading cannot occur.



DIRECT SHAFT MOUNTING with bearing being pressed or shrunk on the shaft. Especially desirable to achieve maximum economy on production applications.



ADAPTER MOUNTING permits use of commercial shafting without machining. Easy installation and removal of adapter-type bearings are provided by the tapered sleeve, locknut and lockwasher.

Builders of industry's heaviest equipment

choose this self-aligning roller bearing for toughest applications

You're in company with blue-chip machinery makers when you specify high-capacity Link-Belt self-aligning roller bearings. Wherever tough-duty equipment calls for self-contained, pre-adjusted bearings and simple mounting, you'll find them on the job . . . handling heavy radial and thrust shock loads.

These self-aligning roller bearings have internationally standardized boundary dimensions and are available everywhere. Link-Belt also makes industry's most complete line of ball and roller bearing blocks. This includes pillow blocks plus flange, flange cartridge, cartridge, take-up and hanger blocks. Ask any one of the 40 Link-Belt offices for data Book 2550 or an authorized stock-carrying distributor.

LINK-BELT

Ball and Roller Bearings 13,003



Bearing boundary dimensions are international standards for Series 22200 and 22300—22500-A and 22600-A.

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

For More Information Circle No. 179 on Inquiry Card—Page 17

Why

buy plated parts . . . when stainless steel fabricated parts cost no more?

Sound fantastic? It really should be. But Bishop's "Tube Mill Pre-fabricated tubular parts" give you major savings that permit you to buy stainless steel at about the same price as a plated part.

Think what this means! Better, longer-lasting, non-corrosive parts . . . increased quality that will give your product extra sales appeal . . . and durability for extra years of service.

These savings are made possible because Bishop, one of America's leading re-drawers of stainless steel tubing, is the *only* mill that makes a specialty of precision fabricated tubular parts.

"Under one roof" redraw and fabrication facilities mean savings in time, transportation and handling costs . . . savings that are passed on to you in lower per unit costs.

And all Bishop "pre-fabricated" parts are made from Bishop-drawn stainless steel tubing . . . the tubing of quality-conscious buyers.

On your next order, why not compare price tags? Send your prints and specifications, or let our engineering department design to fit your needs. Quotations will be returned promptly.

Whether stainless steel tubing or stainless steel tubular parts, you can't buy better than Bishop.

Catalog on Request

THE ONLY REDRAW MILL THAT SPECIALIZES IN PRECISION FABRICATED TUBULAR PARTS

J. BISHOP & CO. • Platinum Works

STAINLESS STEEL DIVISION, MALVERN, PENNA.

For More Information Circle No. 180 on Inquiry Card—Page 17



Free-Cutting CHASE® BRASS ROD

makes tools last longer, lowers production costs!

The big difference in machining Chase Free-Cutting Brass Rod is a direct result of just the *right* amount of evenly dispersed lead particles in the alloy. The proof is in the chips!

Chase Free-Cutting Brass Rod yields short, brittle chips which rapidly clear cutting tools — make possible heavier feeds, higher cutting speeds—without gumming or jamming.

You can get Chase copper alloys in many different cross sections that save additional machining time. These include round, hexagonal and octagonal rods, square and rectangular bars, and oval, half oval and half round shapes. Remember, too, repeat orders of Chase alloys *always* have the same cutting characteristics.

Get the alloy rod you need, from Chase wholesalers or from Chase's own fully stocked warehouses or mills. Write, wire or phone, today!

Chase®

BRASS & COPPER CO.

WATERBURY 20, CONNECTICUT • SUBSIDIARY OF KENNECOTT COPPER CORPORATION

NEW CHASE ROD and WIRE MOVIE "IN THE CHIPS"
Contact your nearest Chase Warehouse or Sales Office now to arrange for a loan of this informative film for showing in your own organization. Write on your Company letterhead.

The Nation's Headquarters for Brass & Copper (†sales office only)

Atlanta	Chicago	Denver	Indianapolis	Minneapolis	Philadelphia
Baltimore	Cincinnati	Detroit	Kansas City, Mo.	Newark	Pittsburgh
Boston	Cleveland	Grand Rapids†	Los Angeles	New Orleans	Providence
Charlotte†	Dallas	Houston	Milwaukee	New York	Rochester†
St. Louis	San Francisco	Seattle	Waterbury		

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For More Information Circle No. 182 on Inquiry Card—Page 17→

Have you evaluated your





TRIANGLE MFG. CO.
"cut costs 15%"



GAST MANUFACTURING CORP.
"30% lighter, but performs better"

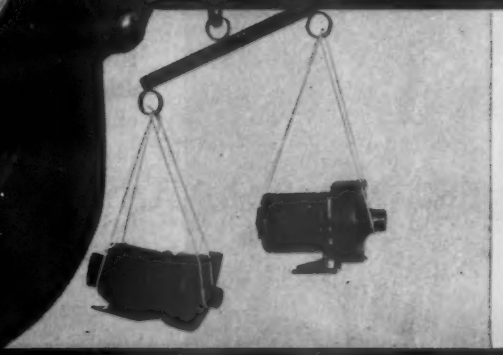


ROWE SPACARB, INC.
"saved $3 per unit"



AMERICAN-STANDARD
"cut product size and weight"

much



PACIFIC PUMPING CO.
"helped double sales"



DECORA MFG. CO.
"saved 40¢ per unit on shipping"

"he



SWEDEN FREEZER MFG. CO.
"most dependable motor"



AIRCRAFT-MARINE PRODUCTS, INC.
"extremely low service expense"



DEMING COMPANY
"saved on handling and shipping

"1

motor savings yet?



AMERICAN BLOWER CO.
"reduced motor stocks"



A. B. DICK CO.
"much more value for your money"



UNIVERSAL INDUSTRIES
"helped make peeler portable"



FINNELL SYSTEM, INC.
"100% standardized on G.E."

TODAY THOUSANDS OF COMPANIES CUT COSTS, BOOST QUALITY WITH ADVANCED G-E MOTORS

In the past four years, equipment manufacturers have bought nearly 5,000,000 smaller, lighter G-E fractional-hp motors. Today, they testify to the ***tangible, measurable benefits*** they have realized. For example:

MANUFACTURING AND SHIPPING SAVINGS amounting to about 15% resulted from a Detroit pump manufacturer's* decision to switch to advanced-design G-E motors. Rugged construction of the G-E motor permitted direct mounting, eliminated several parts. Lighter weight reduced worker fatigue, helped speed assembly—shipping and packaging savings alone were 30¢ per unit! Result: a better-looking, more efficient unit which sells at a 10% lower price!

GREATER POWER AT NO EXTRA COST helped a Chicago office machine manufacturer* boost the saleability of his product. Lower handling, shipping, and assembly costs, modern appearance, and the sales value of the G-E monogram cause this well-known manufacturer to credit the G-E motor with making it "easier to design, build, ship, and sell" his machines.

UNSURPASSED DEPENDABILITY of the "years-ahead" G-E motor is a proven fact to thousands of manufacturers. A typical experience is that of a California compressor manufacturer*, who introduced a G-E powered paint sprayer over two years ago. To date 99.9% of these units have never required motor service.

TREMENDOUS SALES APPEAL of products designed to take advantage of all the G-E motor benefits is typified by the case of a West Coast pump manufacturer*. Just one year after introducing a streamlined new unit, made smaller and easier to handle by the G-E motor, his manufacturing costs had been reduced and his ***sales had doubled!***

"Years-ahead" design and proved performance of the G-E motor are helping to establish the leaders in many fields. If you'd like more information, or help in taking greater advantage of the G-E motor's benefits in your products, contact your nearby G-E Apparatus Sales Office, or write to Section 702-24, General Electric Co., Schenectady 5, New York.

**Actual case histories available on request.*
†Dupont trade-mark for polyester film

ONLY G.E. OFFERS ALL THESE FEATURES



MORE COMPACT—up to 40% smaller, 50% lighter—saves you material and handling costs.



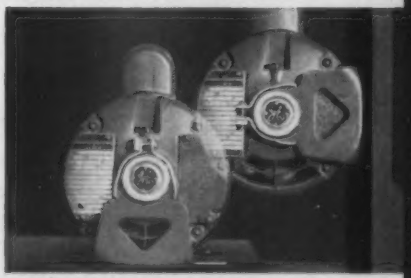
MYLAR† INSULATION (right)—35 times the moisture resistance of paper insulation (left).



ALL-ANGLE OPERATION — protective lubrication in any position—without costly specials.



DOUBLE LUBRICATION LIFE—50% more oil, efficient retention system cut maintenance.



MOUNTING VERSATILITY—rotate motor in resilient *or solid base.* Cradle easily removed.

Progress Is Our Most Important Product

GENERAL ELECTRIC



Always ready . . . always able to handle your drop forge designs

Bethlehem's drop forge shops are ready for you—always!

You can depend upon us for volume production. Even more important, you have the assurance of expert workmanship. Unless you have been through the Bethlehem shops, it is hard to visualize their full extent and the care with which each step in an order is handled.

Bethlehem produces an almost endless variety of designs for the oil, mining, aviation, automotive, electrical, and other industries. This is made possible by strictly first-class facilities, which include a modern die-sinking plant, steam and board drop hammers to 8,000 lb, mechanical presses to 3,000 tons, upsetters to 9 in., and full heat-treating equipment.

We're anxious to do business with you. Why not call us when you are next in the market for closed-die forgings? You'll find our prices and deliveries are fully competitive.

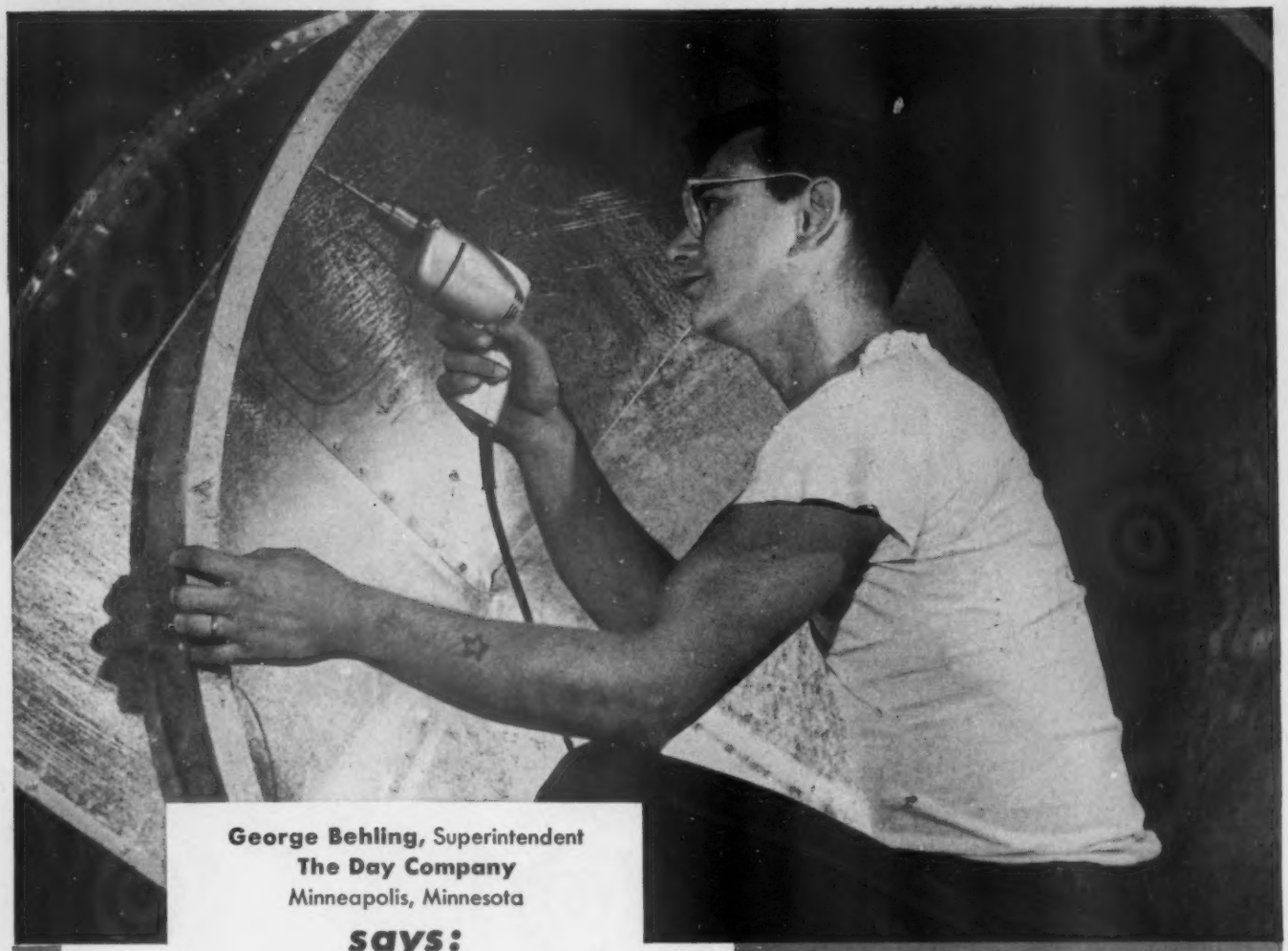
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

For More Information Circle No. 183 on Inquiry Card—Page 17



George Behling, Superintendent
The Day Company
Minneapolis, Minnesota

says:

"SKIL Drills Stay on the Job *TWICE AS LONG!*"

"In our business, grain and cement dust are hard on electric tools. Yet, with SKIL Model 75 drills, we have far less trouble than with any other brand.

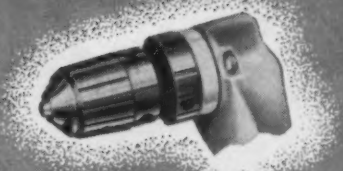
"Our men like SKIL Drills better, too. They have extra power and they're easier to handle. One other big benefit is SKIL service. When we need it, the SKIL branch takes care of us in a hurry. We think they're the best drill by far . . . in every way."

SKIL
PORTABLE TOOLS

Made only by SKIL Corporation
formerly SKILSAW, Inc.
5033 Elston Avenue, Chicago 30, Illinois
3601 Dundas Street West, Toronto 9, Ontario
Factory Branches in All Leading Cities

When you buy a drill be sure it's a SKIL

New Keyless Chuck* Speeds Bit Changing . . . Ends Key Fumbling!



Famous SKIL Model 75 Drill offers fresh working advantages with high-torque keyless chuck. Gripping power is even greater than with a keyed chuck!
**Optional at slight additional cost.*

★ ★ ★ ★ ★

- **Model 75 is 55% more powerful, yet lighter in weight than other drills!**
- **Choice of 7 speeds (500 to 5,000 r.p.m.)**
- **Handy, safety-designed trigger lock for continuous operation—side location for easy use.**
- **All anti-friction bearings for longer life.**
- **Large inspection plate for routine maintenance.**
- **Comfortable "contour-grip" handle.**

FREE!

Send this coupon. Your SKIL Distributor will give you a no-obligation demonstration and FREE trial. See how you can increase performance with Model 75 SKIL Drill.

SKIL Corporation, Dept. P-46
5033 Elston Avenue, Chicago 30, Illinois

☐ I would like a demonstration and FREE trial.
☐ Please send literature on SKIL Drill.

Name_____

Address_____

City_____ Zone____ State_____

For More Information Circle No. 184 on Inquiry Card—Page 17

A SHORT CUT TO A FINISHED PRODUCT



SAVE YOURSELF TIME AND TOOL CHARGES

with Anaconda multiple-plunger press products—in a wide choice of metals

If you need parts like these in quantity, The American Brass Company can save you time and money. Through its specialized experience—and thousands of stock tools—it may save tool charges, too.

Ferrules, grommets, eyelets, deep-drawn cups and shells, and thousands of other intricate, close-tolerance parts made from strip metal are everyday business. American Brass Company design engineers and toolmakers have earned an enviable reputation for cutting costs and performing the almost impossible in design and production.

Your choice of metal: Such fabricated products can be furnished in copper, brass, bronze, nickel silver, nickel, iron, steel, stainless steel, and aluminum — in a wide variety of finishes.

Standard products: For a selection of more than 1000 eyelets of common sizes and styles, as well as eyelets kept in stock for immediate shipment, write for Catalog BG-1.

Special products: Just send a sample, drawing, or description, together with the quantity you need, the metal to be used, and other pertinent information. Address: The American Brass Company, Waterbury Brass Goods Division, Waterbury 20, Conn. 6588

ANACONDA®
MULTIPLE-PLUNGER PRESS PRODUCTS

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For More Information Circle No. 186 on Inquiry Card—Page 17→

Here's why it pays *to know your* HSM

HONEYWELL SUPPLIES MAN

DICK BULL, HSM (Honeywell Supplies Man) in the Los Angeles area, tells Clyde Rosellen, research engineer at North American Aviation, Inc., about the many quality features of Brown thermocouple extension wire to be used in certifications for the company's heat-treating furnaces.

Expert, personalized service is the keynote of the HSM Plan. This modern way to specify and buy pyrometer supplies can bring important improvements in economy and convenience for your own purchases, too. Your nearby HSM will be glad to show you how the Plan can work for you. Call him today . . . he's at your local Honeywell office, as near to you as your phone.

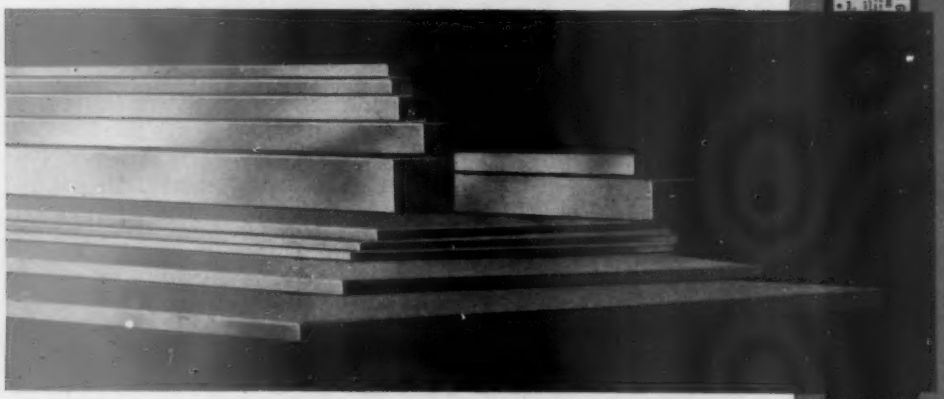
MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Division.*
West Coast Offices: 2840 E. Olympic Blvd., Los Angeles, Calif.; 104 S.E. 7th Ave., Portland, Ore.; 1136 Howard St., San Francisco, Calif.; 430 8th Ave., North, Seattle, Wash.; 917 W. Mallon St., Spokane, Wash.

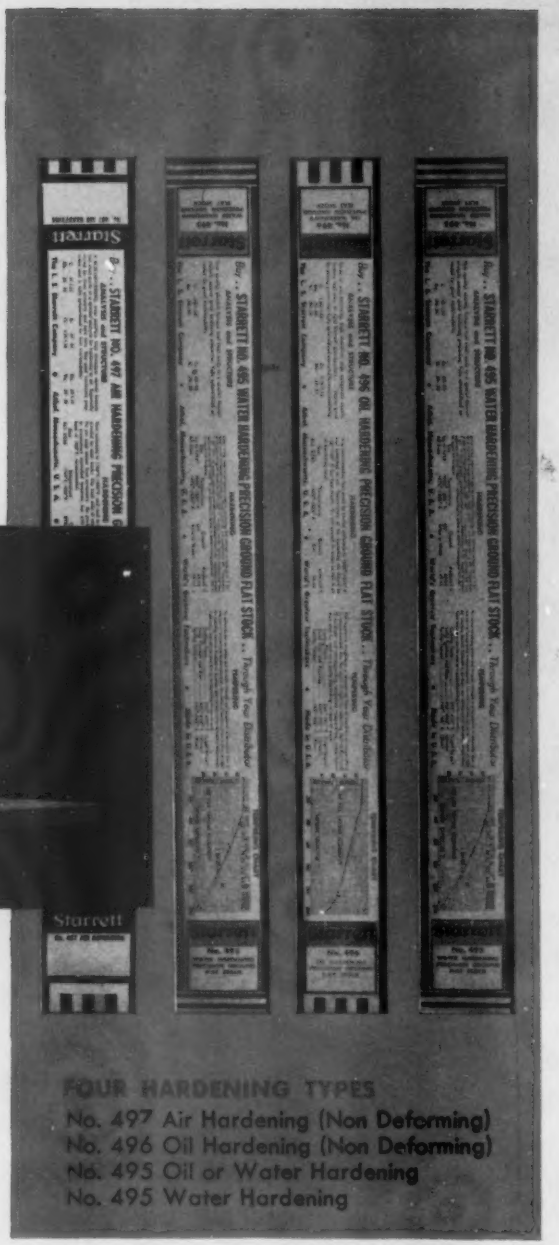
● **REFERENCE DATA: Write for Booklet, "The HSM Plan" . . . and for Pyrometer Supplies Buyers' Guide No. 100-5.**

MINNEAPOLIS
Honeywell
BROWN INSTRUMENTS
First in Controls



NOW OVER 1000 SIZES





Starrett precision ground FLAT STOCK and DIE STOCK

Now it's easier than ever to save time and money by using Starrett Precision Ground Die Stock and Flat Stock. With over 1000 sizes available, you can make *all* your machine and fixture parts, special tools and gages, stamps, dies, cutters, templates this sensible, money-saving way.

Just think what it means . . . no time lost hunting up stock — no slow and costly grinding to size. Just lay it out and saw it out. Four types — air, oil, oil or water and water hardening — let you choose the hardening characteristics that fit your specific needs. Your Industrial Distributor has it. Specify *Starrett* to get the wide choice of sizes.

Flat Stock comes in 18″ lengths, Die Stock in 36″ lengths. Thicknesses from 1/64 to 3″. Widths from 1/8″ to 14″. Each piece marked for type and size and individually packaged in protective envelope.



NEW FOLDER and WALL CHARTS

Catalog folder, desk chart and wall chart list all types and sizes with hardening formulas. Write for free copy. Address Dept. P.

Buy THROUGH YOUR INDUSTRIAL DISTRIBUTOR — Prompt delivery, Dependable service, Quality products

BUY THROUGH YOUR DISTRIBUTOR

Starrett®

"WORLD'S GREATEST TOOLMAKERS"

STARRETT TOOLS

MECHANICS' HAND MEASURING TOOLS AND PRECISION INSTRUMENTS • DIAL INDICATORS • STEEL TAPES • PRECISION GROUND FLAT STOCK • HACKSAWS, BAND SAWS and BAND KNIVES

THE L. S. STARRETT COMPANY, ATHOL, MASSACHUSETTS, U. S. A.

For More Information Circle No. 187 on Inquiry Card—Page 17



All set to fill your order

for solder in any form or formula or flux for any soldering job

What do you want in a solder or flux?

Want a solder with extra strength . . . greater hardness, more brightness, lower melting or some other special property? National Lead has it or will make it for you.

Want a special die-cut preform . . . or bar, wire or tape of a particular shape . . . or a special solder powder, paste or paint? National Lead will produce it to your specifications.

Want a flux that cleans and wets better . . . or promotes capillary rise . . . or needs no after-rinse . . . or is non-corrosive and non-conductive . . . or limits solder flow to a specific work area? National Lead will compound it for you.

And take advantage of National Lead's solder research and testing facilities. Maybe National Lead's metallurgists and chemists can help you find solders and fluxes that are better suited to the job you are doing and that cut your costs. The nearest National Lead branch office will be glad to look into it. All it takes is a phone call.

National Lead Company

Dutch Boy PRODUCTS

General Offices: 111 Broadway, New York 6, New York • Atlanta • Baltimore • Buffalo • Chicago • Cincinnati • Cleveland • Dallas • Detroit • Kansas City • Milwaukee • New Orleans • Omaha • Philadelphia • Pittsburgh • St. Louis • St. Paul • Boston: National Lead Co. of Mass.; Pacific Coast: Morris P. Kirk & Son, Inc., Los Angeles, Emeryville (Calif.), Phoenix, Portland, Salt Lake City, Seattle; Canada: Canada Metal Co., Ltd., Montreal, Toronto, Vancouver, Winnipeg.

For More Information Circle No. 188 on Inquiry Card—Page 17

Look at what's new
in faster yard service

New WHITING Heavy-Duty TRACKMOBILE®
Speeds Up Freight Car Switching, Spotting, Hauling!

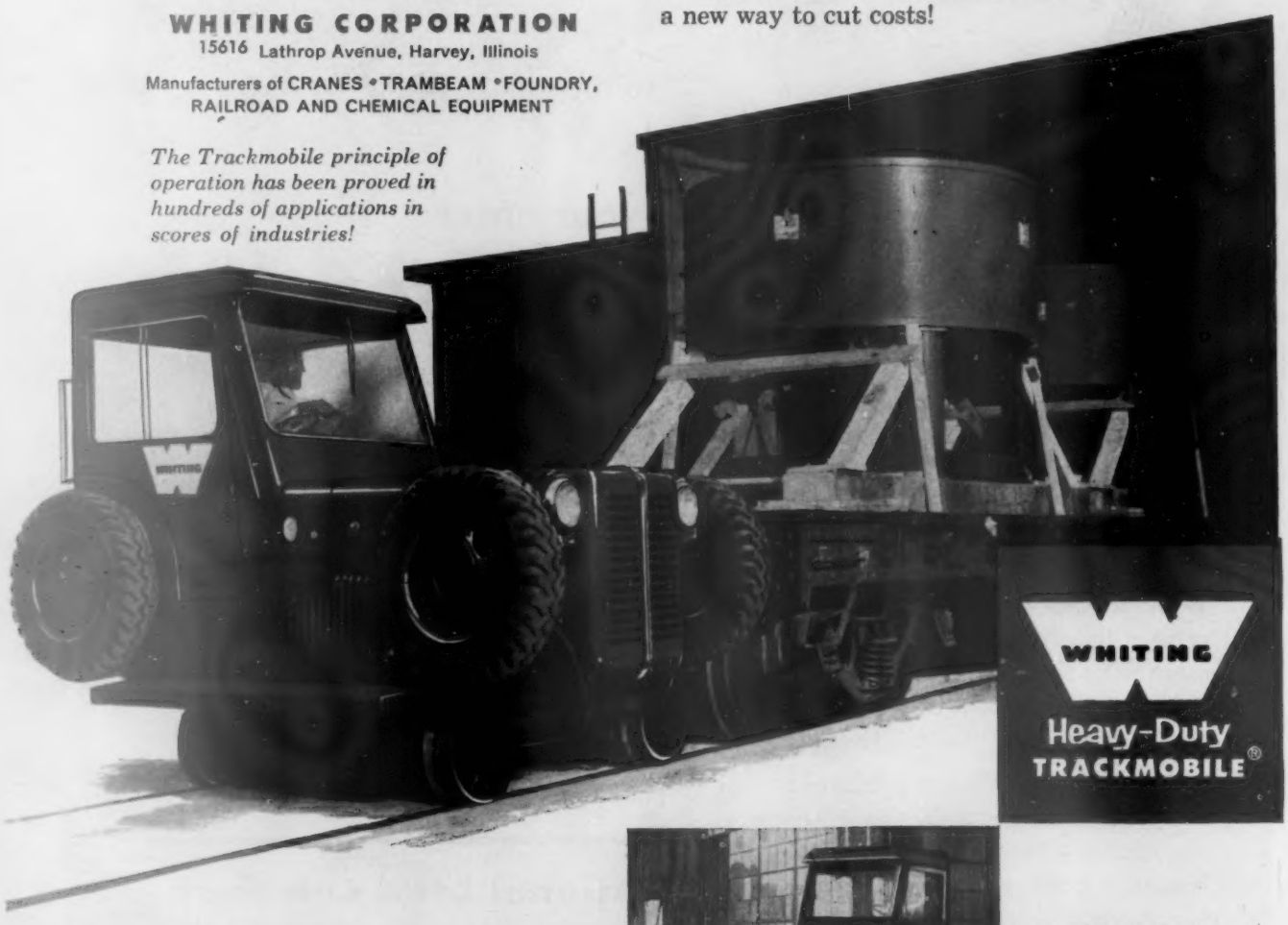
The new Heavy-Duty Trackmobile lowers costs by keeping freight *on the move!* It easily pulls heavily loaded freight cars, expedites production, saves manhours. Exclusive design provides *both* road and rail utility . . . eliminates bottlenecks and clogged sidings. Ruggedly constructed, it provides continuous all-weather, day and night service with a minimum of maintenance.

The Heavy-Duty Trackmobile ends demurrage losses and wasted waiting time. It provides a *completely new efficiency* never before possible. It's powerful and dependable, does *big* jobs at *little* cost. Look to the Trackmobile for a new way to cut costs!

WHITING CORPORATION
15616 Lathrop Avenue, Harvey, Illinois

Manufacturers of CRANES • TRAMBEAM • FOUNDRY, RAILROAD AND CHEMICAL EQUIPMENT

The Trackmobile principle of operation has been proved in hundreds of applications in scores of industries!





Write today for the new Heavy-Duty Trackmobile Bulletin T-115. Indicate your particular car moving problems and we'll be glad to suggest ways the new Trackmobile will save you both time and money.



On rail wheels the Trackmobile pulls freight cars — moves to and from the track on road wheels. Use it to pull skids and carts when on road wheels.

For More Information Circle No. 189 on Inquiry Card—Page 17

Whatever your business may be...

you can save money with stapling

Below you see five of the vast number of businesses which report savings with Bostitch stapling. In shipping, Bostitch provides quick, easy carton closures—on seams, tops and bottoms—that actually strengthen the cartons. In production, everything from paper to sheet metal is fastened with Bostitch equipment—speeding output, cutting costs. A Bostitch Economy Man will be glad to help with your fastening problems. He's one of 350 trained fastening specialists working out of 123 cities in the U. S. and Canada. Over 800 different models of Bostitch staplers use 200 types of staples, tailored to the job.



These steel freezer cabinets, once spot-welded, are now wire stitched. *"Bostitch method trims fastening costs by 75%."*



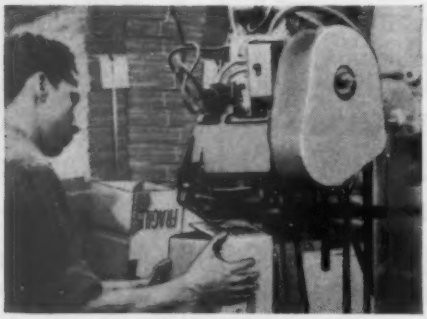
Using Bostitch Autoclench stapler, this man says he seals boxes *"five times faster"* than he can with glue. Saving *"over 50%."*



Air freight bills stapled to corrugated containers with new-type Bostitch tacker *"hold better than with tape at 1/10th the cost."*



Electrically operated Bostitch stapler bags hardware parts twice as fast as hand stapler. *"Savings in labor alone, 50%."*



"Twice as many boxes can be stapled in an hour, with only two thirds as much manpower." Staplers also take up less floor space.



For greatest savings, use only genuine Bostitch staples in Bostitch machines. They're precision-made to work together!

HERE'S HOW TO CUT COSTS in your business; attach this coupon to your business letterhead and mail to us today.

BOSTITCH, Inc.
724 Mechanic Street, Westerly, R. I.

Your proposition interests me—show me how stapling can save money for our business.

I'm particularly interested in the following applications (please check):

HI-SPEED PRODUCTION FASTENING
- ☐ stapling vs. riveting
- ☐ stapling vs. spot welding
- ☐ stapling vs. screws or bolts
- ☐ stapling vs. glue or cement
- ☐ stapling vs. tape
- ☐ stapling vs. tacks or nails
- ☐ stapling vs. solder
- ☐ stapling vs. wire or string

PACKAGING AND CARDING
- ☐ sealing bags (cloth, paper or plastic)
- ☐ mounting products on display cards
- ☐ fastening items to individual cards

SHIPPING ROOM ECONOMIES
- ☐ preparing cartons for filling
- ☐ sealing filled cartons
- ☐ lining or padding crates
- ☐ applying shipping bills or tags

BUILDING APPLICATIONS
- ☐ applying asphalt roofing
- ☐ laying underfelt
- ☐ installing ceiling tile
- ☐ applying insulation
- ☐ installing low-voltage wiring
- ☐ applying shake shingle siding

OFFICE EFFICIENCIES
- ☐ filing
- ☐ routing
- ☐ posting
- ☐ binding folders and reports
- ☐ preparing advertising dummies

Fasten it better and faster with

BOSTITCH®
STAPLERS AND STAPLES

Name _____ Position _____

Company _____

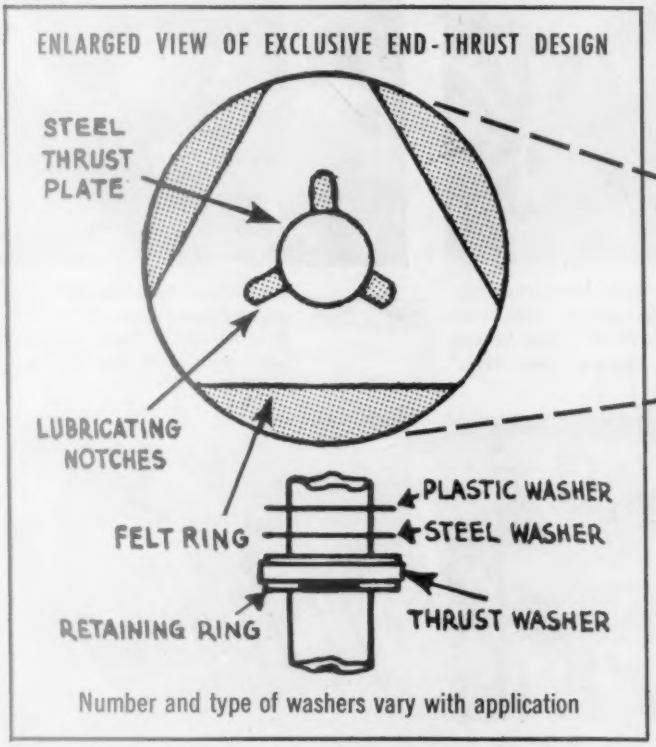
Address _____

City _____ Zone _____ State _____

For More Information Circle No. 190 on Inquiry Card—Page 17

Emerson-Electric engineering highlights

New, exclusive end-thrust design for vertical and shaded-pole, sleeve-bearing motors





Smooth, quiet operation and longer motor life result from the exclusive end-thrust design incorporated in Emerson-Electric sleeve-bearing motors, for thrust applications.

The face of the new-design steel thrust plate is provided with three slotted lubricating notches. In operation, the lubricant-saturated felt ring "bellies" up through the slots. This causes the felt-ring lubricant to be carried to the thrust surface. Continuous lubrication is thus assured—longer, noiseless operating life results.

This exclusive end-thrust feature is another Emerson-Electric engineering highlight. It illustrates once more the reason why Emerson-Electric motors have been the wise choice for power-driven equipment for more than 60 years.

Call on Emerson-Electric motor-drive specialists

The combined experience of Emerson Electric motor-drive specialists is available to designers and manufacturers of motor-driven appliances. This valuable "assist" from Emerson Electric can be profitably applied, whether you're designing or redesigning for performance and sales. Write for Bulletin No. M28. THE EMERSON ELECTRIC MFG. CO., St. Louis 21, Mo.

Emerson-Electric of St. Louis • Since 1890

BRANCHES: NEW YORK 7, N. Y., 11 Park Place • CHICAGO 23, ILL., 1623 S. Pulaski Road • SYRACUSE, N. Y., 209 Oakley Drive
PHILADELPHIA (Secane), PA., 868 Quince Lane • DETROIT 7, MICH., 1375 E. Jefferson Ave. • CLEVELAND 16, OHIO, 1580 Rockland Ave.
LOS ANGELES 42, CALIF., 5415 York Blvd. • DAVENPORT, IOWA, 617 Brady Street • CINCINNATI 11, OHIO, 2917 Ratterman Ave.

For More Information Circle No. 191 on Inquiry Card—Page 17

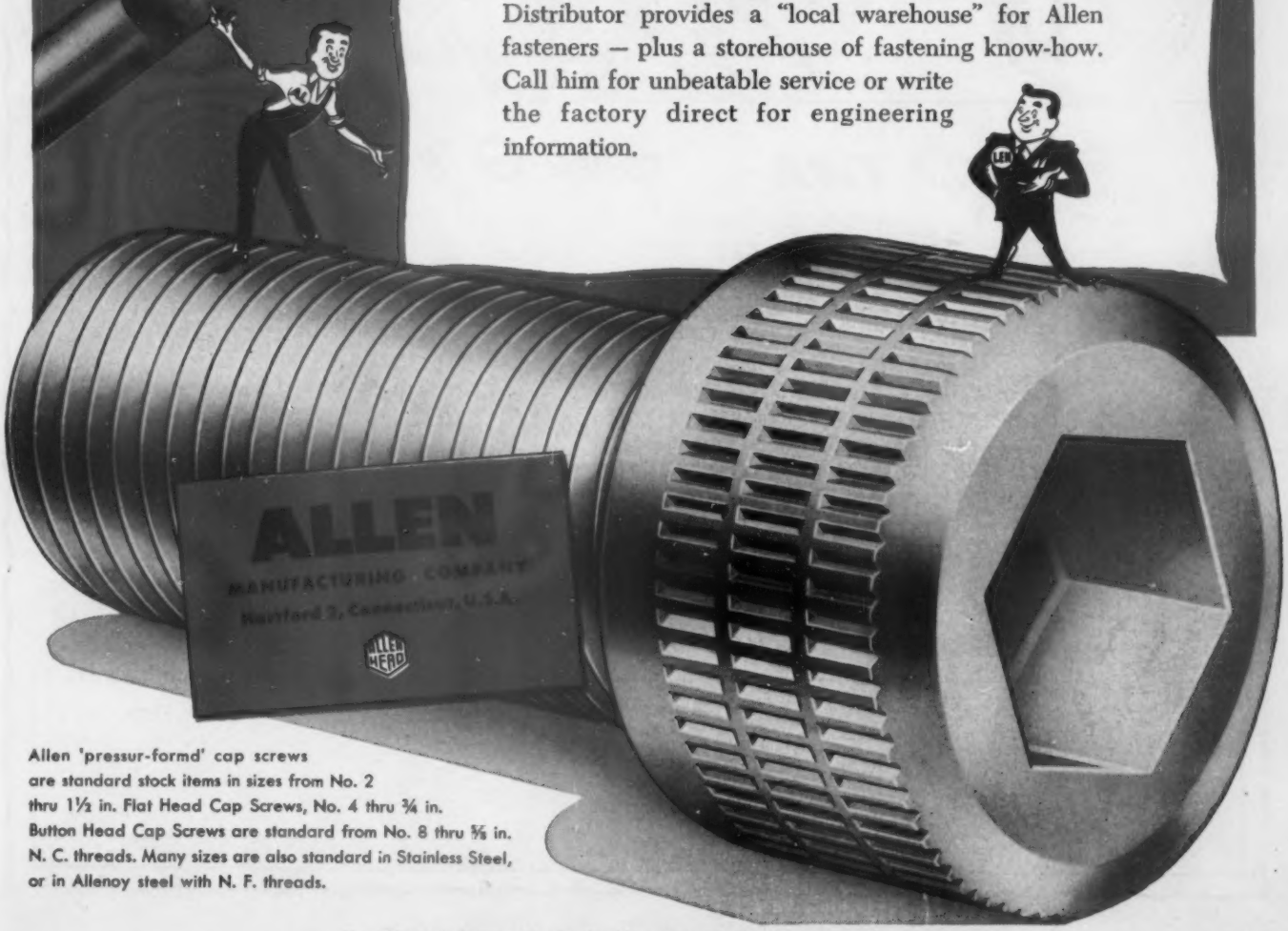
Pressur-Forming

ASSURES A BETTER FIT, GREATER STRENGTH, LONGER LIFE

ALLEN originated the cold forging method of precision screw production. Today's advanced methods result in a combination of tremendous strength, fatigue resistance and precision.

Pressur-forming preserves the tough fibers of Allenoy steel continuous, uncut and concentrated where strength is needed most . . . conforming to the contours of head, socket and threads.

NOW WITH THE LEADER POINT Allen's exclusive unthreaded leader point makes starting easier and protects against cross threading or damage if the screw is accidentally knocked or dropped. Your Allen Distributor provides a "local warehouse" for Allen fasteners — plus a storehouse of fastening know-how. Call him for unbeatable service or write the factory direct for engineering information.



Allen 'pressur-formd' cap screws are standard stock items in sizes from No. 2 thru 1½ in. Flat Head Cap Screws, No. 4 thru ¾ in. Button Head Cap Screws are standard from No. 8 thru ⅝ in. N. C. threads. Many sizes are also standard in Stainless Steel, or in Allenoy steel with N. F. threads.

For More Information Circle No. 192 on Inquiry Card—Page 17

ALONG THE WAY... OF TWA

TWA AIR CARGO SHIPMENT LAUNCHED VIA OX CART!

TRUE ENOUGH...SHIPMENT FROM FARRUKHABAD ON GANGES RIVER IN INDIA STARTED TO CLEVELAND, OHIO, THE OLD WAY... BY OX CART. THE BLOOMFIELD COMPANY IMPORTED ENTIRE OUTPUT OF TOWN'S COLORFUL COTTON PRINTS...NEEDED THEM IN A HURRY TO MEET SPRING BUYING SEASON IN OVER 2000 RETAIL STORES. FROM BOMBAY SHIPMENT WAS RUSHED DIRECT TO U.S.A. VIA TWA AIR CARGO ...THE MODERN, DEPENDABLE, LOW-COST WAY. KEEP TWA IN MIND. IT'S THE BEST BET WHENEVER SPEED'S A FACTOR. MINIMIZES COST OF INVENTORY IN TRANSIT, TOO.





VIA TWA SUPER-G "BOOKED AIRFREIGHT"

WESTERN GROWERS HAVE LONG USED THIS IDEA... AND REGULARLY SPEED FARM-FRESH FRUITS AND VEGETABLES DIRECT TO MARKETS IN MATTER OF HOURS VIA TWA AIR CARGO. ASSURES BETTER QUALITY... PERMITS REPLENISHING STOCKS QUICKLY... RESULTS IN FASTER TURNOVER. PHONE TWA ANY TIME.

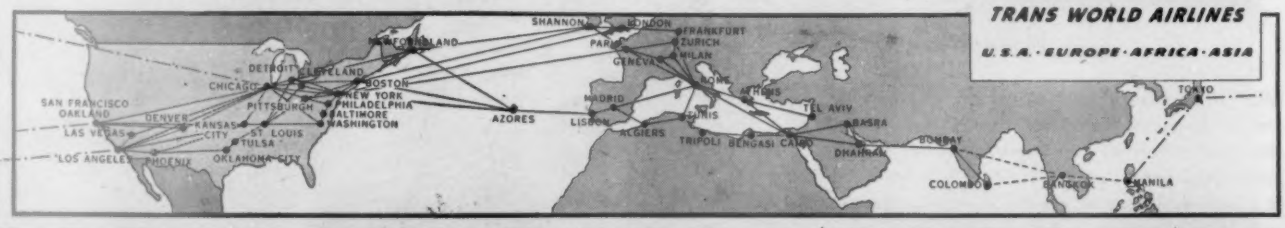
WHEN YOU WANT TO MAKE SURE YOUR COAST-TO-COAST SHIPMENTS MOVE ON SCHEDULE... CALL NEAREST TWA OFFICE AND ASK ABOUT SUPER-G "BOOKED AIRFREIGHT." CARGO CONSULTANT WILL EXPLAIN THIS EASY, QUICK, SURE SERVICE.





All TWA Flights carry Air Mail, Air Freight and - in U.S.A.- Air Express

TWA
TRANS WORLD AIRLINES
U.S.A. · EUROPE · AFRICA · ASIA



For More Information Circle No. 193 on Inquiry Card—Page 17

Great Ideas of Western Man

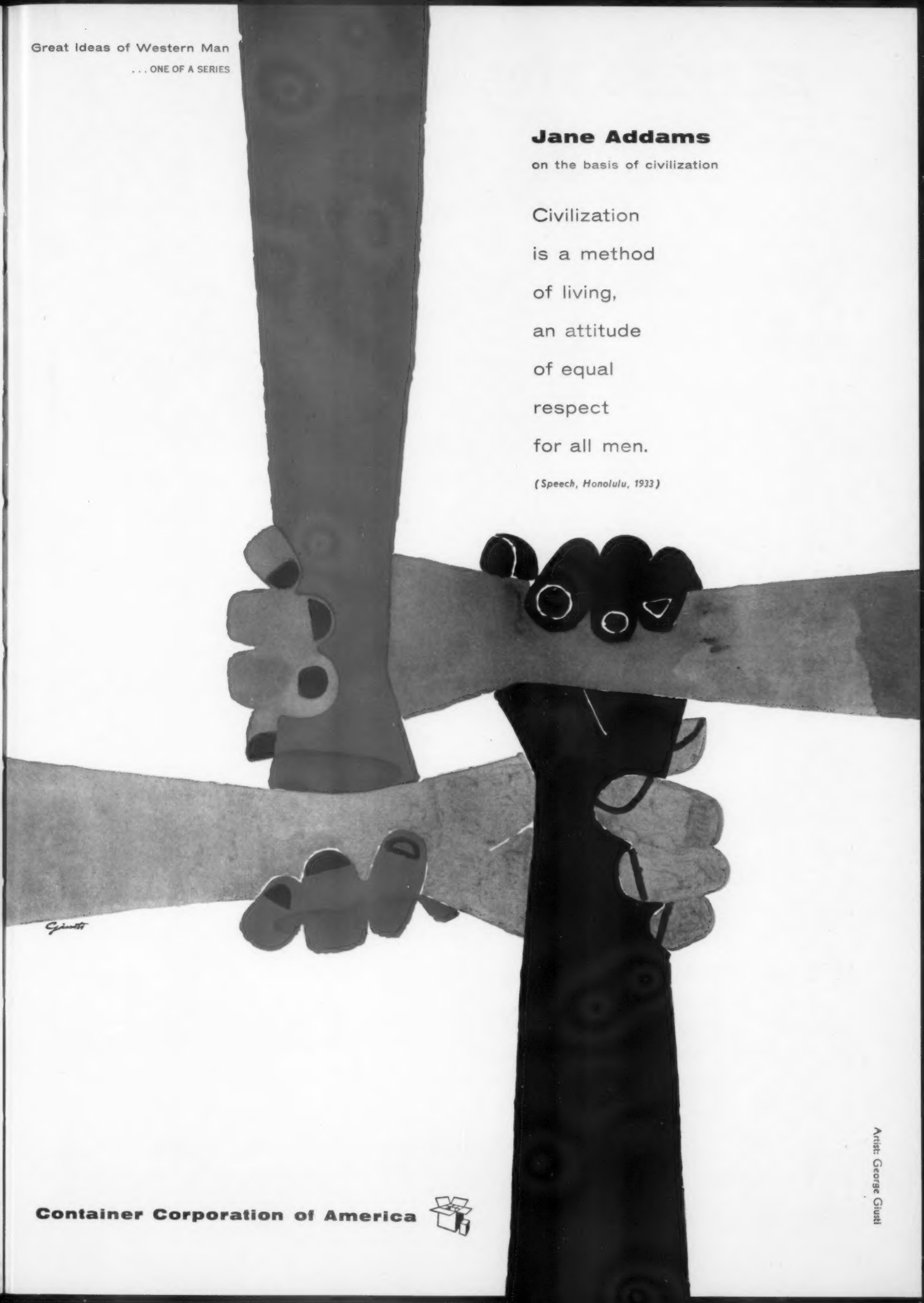
. . . ONE OF A SERIES

Jane Addams

on the basis of civilization

Civilization
is a method
of living,
an attitude
of equal
respect
for all men.

(Speech, Honolulu, 1933)

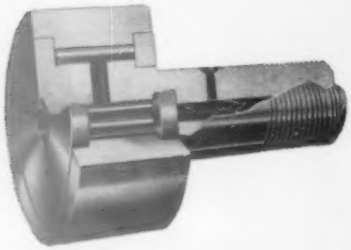


Container Corporation of America

Artist: George Giusti

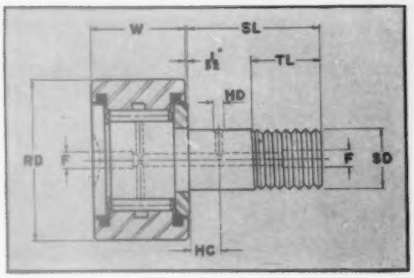
BEARING TIPS by McGill

BEARING BUILT FOR HEAVY-DUTY CAM LOADS



Camrol CF Bearings provide the ultimate in radial capacity, shock resistance and space economy for all cam actioned or guide and support roller applications. An extra heavy outer ring operates on a full complement of small diameter rollers supported by an integral inner race, roller retaining flange and stud. Designed as precision replacement for plain bearing or improvised bolt and bearing units.

New Sealed Bearing Adds to Versatility of Standard Cam Follower



The new SCF series bearing keeps contamination out and lubrication in by means of specially-treated synthetic seals. The SCF bearing is interchangeable dimensionally with standard Camrol bearings.

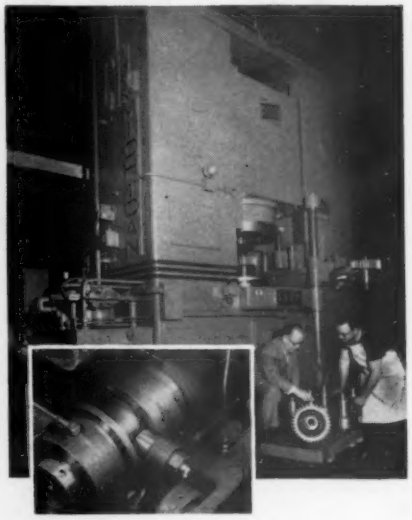
140 Pages of Bearing Facts

Write for your copy of Catalog No. 52, a revised 140-page Bearing Selection Guide. It contains vital product information and 30 pages of engineering data.





CAMROL CF Bearings Cut Power Requirements on J. L. Ferguson Co. Packaging Machines



New Shear-Speed Shapers Achieve Greater Speed and Accuracy Using CAMROL CF Bearings

Michigan Tool Co. uses Camrol CF and CYR bearings in their new machines that produce gears up to 20 inches in diameter and up to 6-inch face widths in only 13 minutes. These bearings, acting as cam followers, accurately control cutting tool feed and relieve tools from the work on return strokes. They insure dependable, precision performance for automatic operation at high production speeds.

Up to 50 Camrol Bearings Used Per Machine

Used as load-carrying cam followers and as guide rollers in PACKOMATIC packaging machinery, McGill Camrol CF bearings have brought several desirable advantages to J. L. Ferguson Company in the eight years this firm has relied on Camrol Bearings.

Exceeding the performance of the roller and pin assembly formerly assembled in the Ferguson plant, the Camrol cam follower bearing has helped improve a variety of cam actuated operations on many of the versatile packaging machines built by Ferguson.

The Camrol CF bearings eliminate wear by reducing friction. This also reduces power requirements for the machines. The CF bearings cost less and are more easily applied than the previous assembly.

For trouble-free operation, up to 50 bearings per machine are now used by this company.

Insure performance with McGILL®

MULTIROL® GUIDEROL® CAMROL®
Full Type Roller Bearings

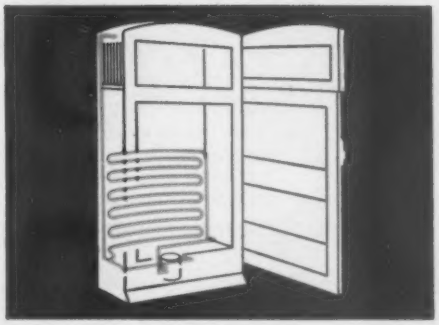
McGILL MANUFACTURING COMPANY, INC., 400 N. LAFAYETTE ST., VALPARAISO, INDIANA

For More Information Circle No. 194 on Inquiry Card—Page 17

HUNG UP BY TUBING PROBLEMS?



Rochester will take you off the hook! Rochester engineers and specialists give you a helping hand from planning stage to final product, assuring top quality steel tubing and offering ways to whittle down costs and give profits a boost. What's more, you can be certain of on-schedule delivery for further cost-cutting efficiency. GM Steel Tubing is rugged, reliable, flexible, versatile—designed to take it and take any shape. It serves as the life-line on more cars, more refrigerators and freezers, more advanced products every day. Contact your Rochester Products Engineer or write us direct for further information.

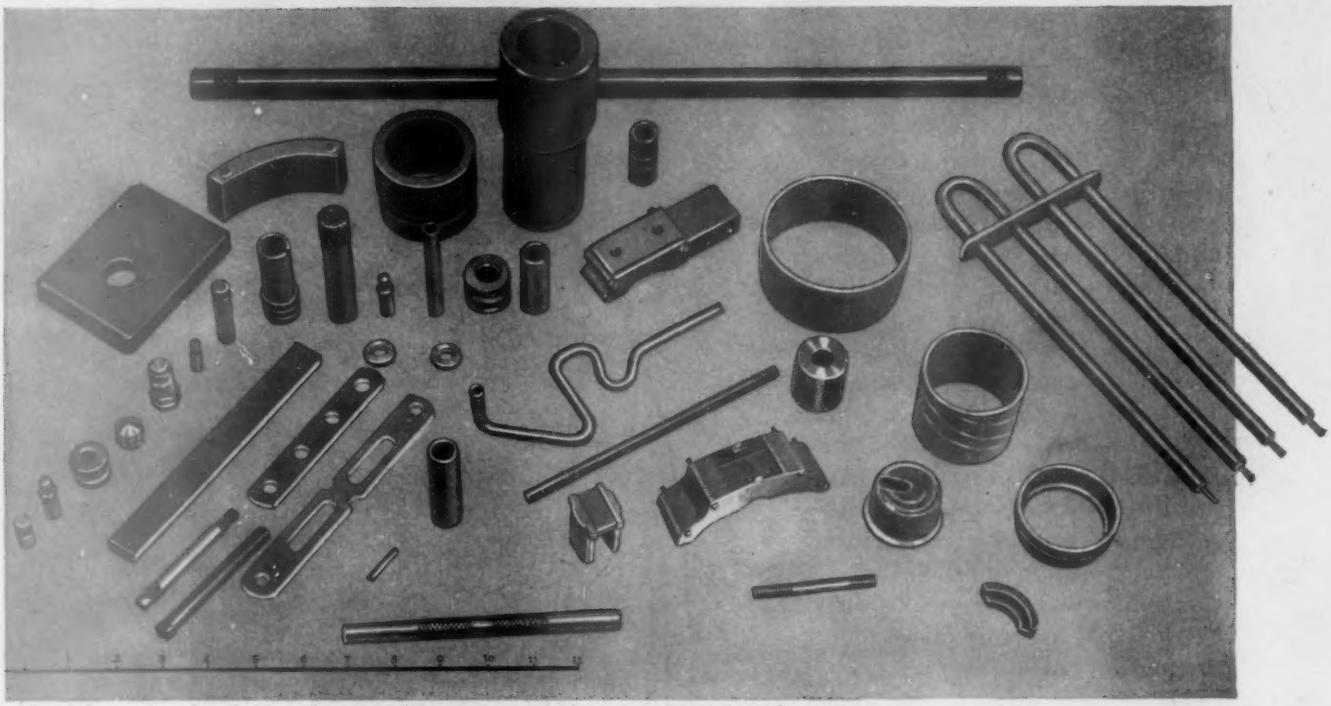


GM STEEL TUBING BY ROCHESTER PRODUCTS

ROCHESTER
PRODUCTS
DIVISION OF
GENERAL MOTORS
CORPORATION
ROCHESTER N.Y.

For More Information Circle No. 195 on Inquiry Card—Page 17

DIE CASTING REPORT

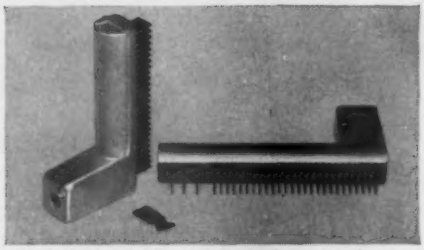


Steel, brass, iron in all other shapes and forms are possible insert materials in die-casting.

Wide variety of inserts, broaden functional use of die casting

The intelligent use of inserts has done much to extend the versatility of die-castings. Some idea of the wide variety of insert materials commonly used in products and components may be gained from the above photo. Steel, brass, and iron (in bar stock, tubing and stamped form) are represented. Even wood has been successfully inserted, and a laminated assembly may be seen in the foreground. Cal-Rod inserts may be seen, too, as well as irregularly bent tubing and common bearing surface inserts. Here are new design possibilities for product engineers seeking ways and means of lowering production costs, without sacrificing functional efficiency.

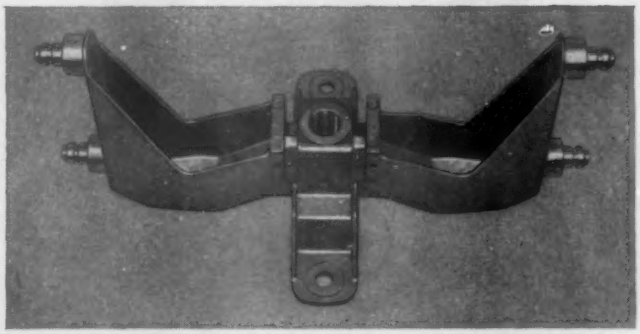
PRECISION is a national, *integrated* die-casting company, capable of serving your company from product design stages through to assembly and shipment of complete products. Write us for more detailed information. Address: Precision Castings Co., New Business Dept., 222 Walnut St., Fayetteville, New York.



This 2-inch wool comb is a functional component of a textile machine. **Die-cast** in zinc it has 26 steel blade inserts; also cast in aluminum with 29 inserts.



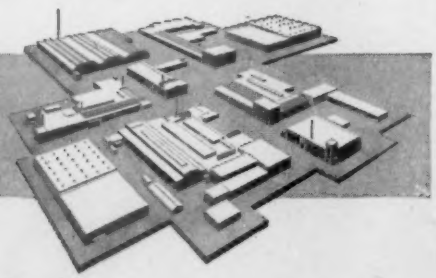
One of the common types of small inserts: The knurled brass threaded insert shown here. This piece measures only 3½ inches outside diameter.



Four identical steel stud inserts are cast in place in this zinc alloy platen toggle frame assembly measuring 12 inches overall. This is a functional unit of a business office machine.

PRECISION CASTINGS CO., INC.

A SUBSIDIARY OF **Harrisburg Steel** CORPORATION



FAYETTEVILLE, N. Y.—SYRACUSE, N. Y.—CORTLAND, N. Y.—NEW YORK, N. Y.
CHICAGO, ILL.—CLEVELAND, OHIO—KALAMAZOO, MICH.

For More Information Circle No. 196 on Inquiry Card—Page 17



MONEY-SAVING MAGIC IN THIS "HEEL AND TOE"

This Tinnerman fastener is modeled after your foot . . . there's a heel and toe . . . it slides easily into the holes punched in the metal, fiber, or plastic, even as your foot slides into a shoe. But it is much easier to put on than to take off!

The primary function of this SPEED NUT fastening principle is to provide a fast, easy-to-apply, low-cost, self-retaining fastener. Its snap-on attachment feature requires little skill and no welding or staking. Yet it assures positive retention for center panel or blind locations.

Tinnerman "heel-and-toe" fasteners can also have a wide variety of fastening features. The self-retaining heel-and-toe can be combined with the famous Tinnerman SPEED NUT impression. Or with a speedy cable clip . . . or a spring catch . . . a molding clip . . . a wire retainer . . . almost any fastening idea you require.

Tinnerman sales engineers are ready to make a SPEED NUT Analysis of your fastening requirements. Or you can write to us for details and engineering data. *Tinnerman Products, Inc., Box 6688, Dept. 12, Cleveland 1, Ohio.*

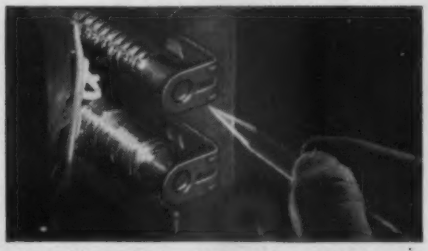
TINNERMAN
Speed Nuts®
FASTEST THING IN FASTENINGS®



On dictating equipment, this SPEED CLIP® holds wires safely away from moving parts.



SPEED CLIPS secure molding on plastic sign, help manufacturer gain 48% assembly saving.



Assembly of TV tuning coil to chassis and servicing simplified with special SPEED CLIP.

For More Information Circle No. 197 on Inquiry Card—Page 17

WE SPECIALIZE IN BRONZE VALVES

Ohio Brass has specialized in manufacture of bronze valves since shortly after the company was founded in 1888. You go to a specialist for other products and services. Why not buy bronze valves from a company that has made a specialty of producing them? In many plants O-B bronze valves have helped reduce maintenance time. O-B bronze valves are competitively priced. Ask your distributor about them.



OHIO BRASS • MANSFIELD, OHIO, U.S.A.

4618—V

O-B VALVES

For More Information Circle No. 198 on Inquiry Card—Page 17

For More Information Circle No. 199 on Inquiry Card—Page 17→

For Proper, Low-Cost Replacement and Maintenance

GITS

World's Largest Selection of Low-Cost Lubricating Devices

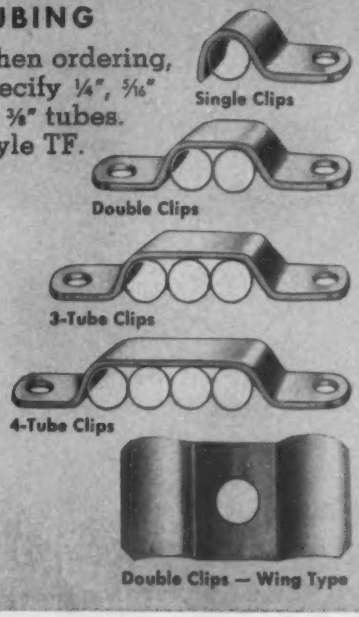
LUBRIKIT . . . An assortment of 95 oil cups of 29 different types. Gits sales records show these oilers are most used for replacement and maintenance. Contents of each separate bin are clearly described on Inside Cover.

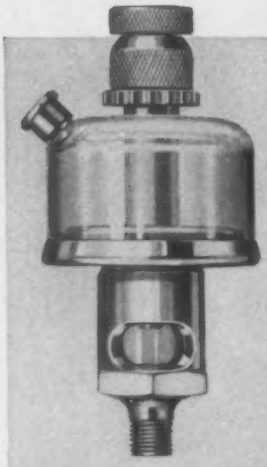
Special Introductory Price
Just $14.95 F.O.B. Factory
Satisfaction or your money back



CLIPS FOR ATTACHING TUBING

When ordering, specify ¼", 5/16" or ⅜" tubes. Style TF.

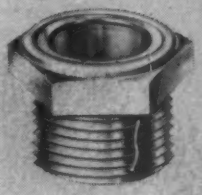




SIGHT GRAVITY FEED OILERS

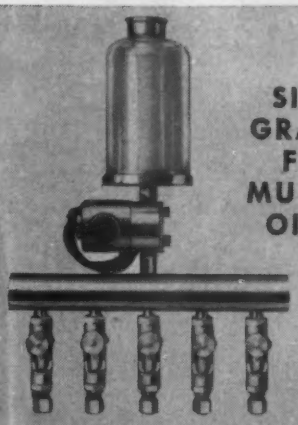
Rate of oil flow regulated by needle valve, directly observed through sight glass in stem.

Shut-off knob does not affect needle valve adjustment. Visible oil supply. Non-breakable. Tops in convenience and dependability, at low cost. Style NFU—No. 3602-A.



GEAR CASE GAUGES

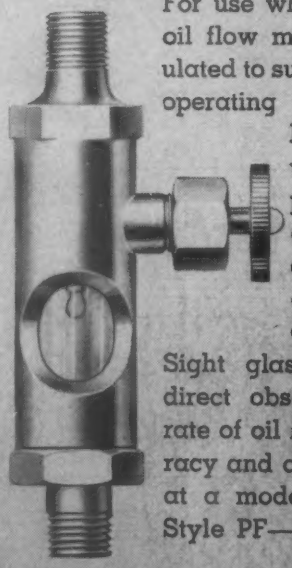
This oil gauge plug permits instant checking of oil level within a transmission or gear case. For use where construction permits insertion in tapped hole. A valuable addition to any such equipment — at very low cost. Style BW—No. 4042.



SIGHT GRAVITY FEED MULTIPLE OILERS

This one unit replaces 3 to 8 individual oilers. Maximum practicality in a small central lubrication system. Positive cut-off during idle periods. Individual vibration-proof needle valve adjustments. With solenoid control (Illustrated): Style MDS—No. 4685-A. Without solenoid: Style MD.

SIGHT GAUGES



For use where rate of oil flow must be regulated to suit changing operating conditions. Needle valve permits extremely accurate adjustment of oil feed. Sight glass provides direct observation of rate of oil flow. Accuracy and convenience at a moderate price. Style PF—No. 4290.

Too much machine "down-time"? Too much time wasted in servicing your machinery? Perhaps some old, worn lubricating devices need replacement. Maybe a different, more modern device will do the job more efficiently. Whenever you replace, specify GITS Lubricating Devices—the widest selection available anywhere, right in stock. The items pictured above are only a few of our many thousands of lubricating devices. Send NOW for your free Catalog.

GITS BROS. MFG. CO.

The Standard For Industry For Almost Half A Century

1865-A South Kilbourn Avenue
Chicago 23, Illinois

Clip this page for handy "rough reference"

FREE... Aluminum Facts from FRASSE



IF you're involved in aluminum procurement or fabrication . . . you should have this new illustrated brochure prepared by Frasse.

Packed with easy-to-find, easy-to-read data about the most used commercial aluminum alloys—it covers in detail general properties, fabricating characteristics, typical applications, and weight comparisons. Also included are alloy and temper designation charts . . . plus available size ranges for each alloy.

Frasse offers well balanced stocks of aluminum, practical engineering assistance in their application and speedy delivery. Let this combination work for you by making Frasse your source for aluminum. For your free Frasse brochure — and complete, quick aluminum service — write or call the Frasse office nearest you.

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Call FRASSE 1st for ALUMINUM

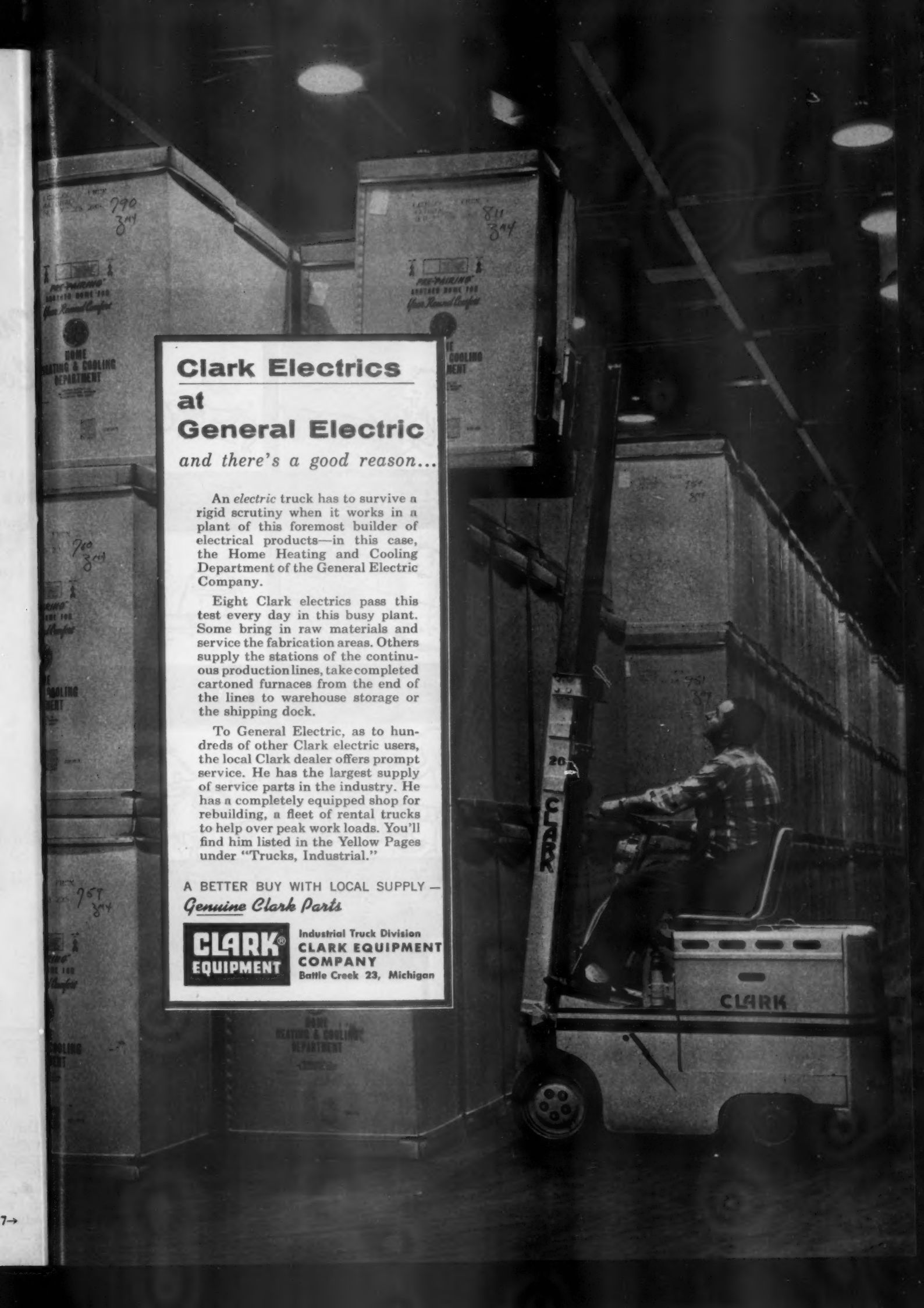
Screw Machine Stock • Rounds Squares • Hexagons • Rectangles Angles • Channels • Plates • Pipe Tubing • Fittings • Extrusions

Peter A. Frasse and Co., Inc.

Distributor of Reynolds Aluminum

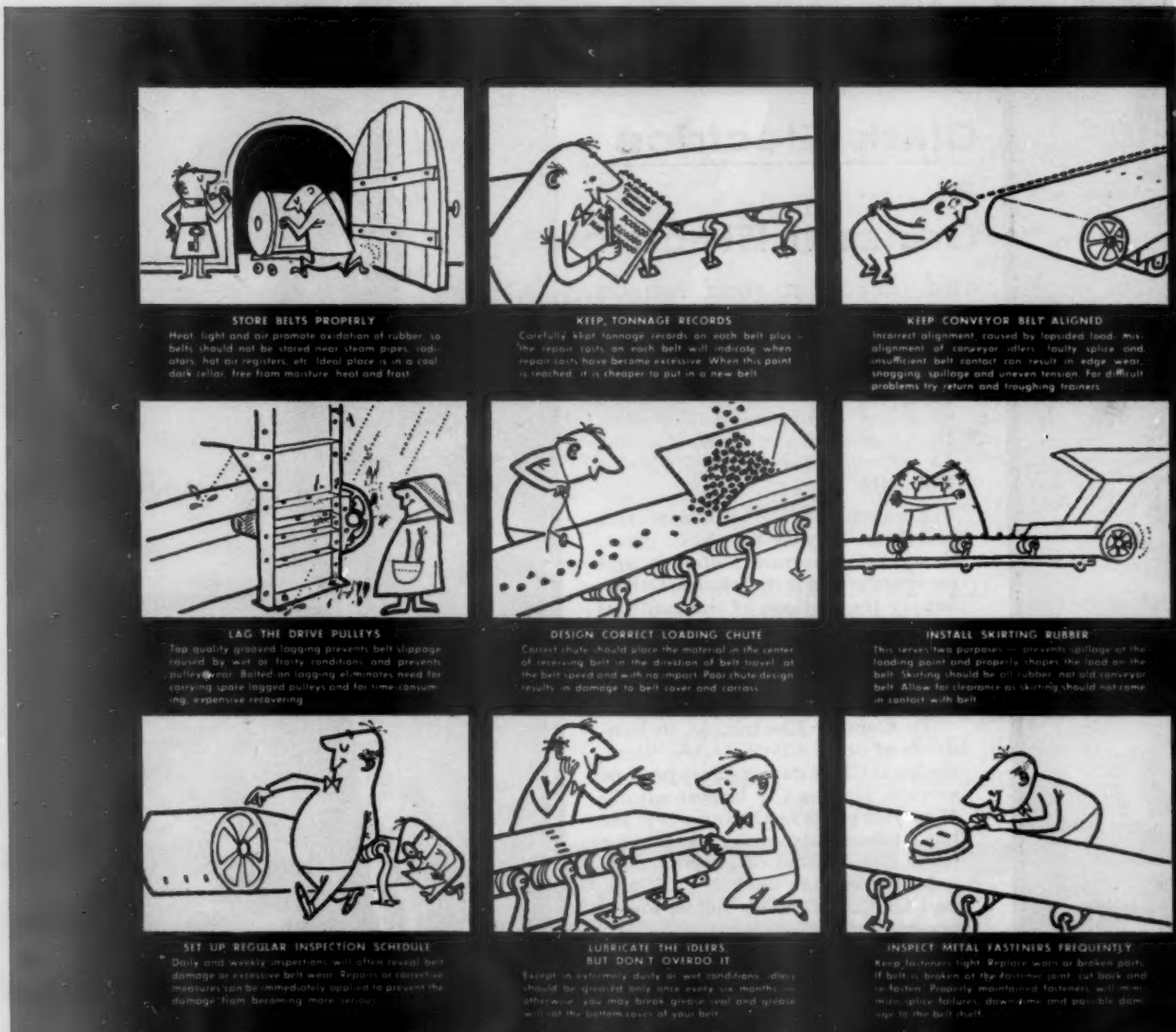
NEW YORK 13, N.Y.	PHILADELPHIA 29, PA.	BUFFALO 7, N.Y.	SYRACUSE 1, N.Y.	HARTFORD 1, CONN.
17 Grand St.	3911 Wissahickon Ave.	P.O. Box K, Station B	P.O. Box 1267	P.O. Box 1949
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LYNDHURST • ROCHESTER • BALTIMORE


Clark Electrics
at
General Electric
and there's a good reason...
An electric truck has to survive a rigid scrutiny when it works in a plant of this foremost builder of electrical products—in this case, the Home Heating and Cooling Department of the General Electric Company.
Eight Clark electrics pass this test every day in this busy plant. Some bring in raw materials and service the fabrication areas. Others supply the stations of the continuous production lines, take completed cartoned furnaces from the end of the lines to warehouse storage or the shipping dock.
To General Electric, as to hundreds of other Clark electric users, the local Clark dealer offers prompt service. He has the largest supply of service parts in the industry. He has a completely equipped shop for rebuilding, a fleet of rental trucks to help over peak work loads. You'll find him listed in the Yellow Pages under "Trucks, Industrial."
A BETTER BUY WITH LOCAL SUPPLY —
Genuine Clark Parts
CLARK EQUIPMENT
Industrial Truck Division
CLARK EQUIPMENT COMPANY
Battle Creek 23, Michigan
CLARK

MORE CARRY IN YOUR

Free Wall Chart gives



INDUSTRIAL DIVISIONS
PRODUCTS

CONVEYOR BELTING • CONVEYOR MACHINERY
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ENGINEERING AND ERECTION OF
COMPLETE BULK MATERIALS HANDLING SYSTEMS
"GLIDE RIDE" THE NEW MOVING SIDEWALK

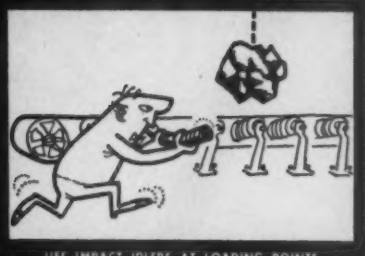
This wall chart, 23" x 33" in two colors, has many valuable tips that will enable you to increase the life of your conveyor belting. To obtain a copy, contact

HEWITT

INCORPORATED • EXECUTIVE

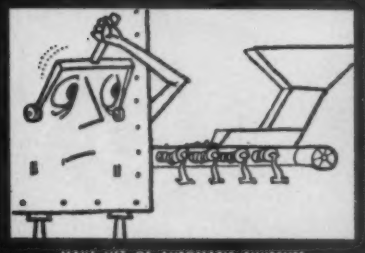
CONVEYOR BELTING

the answers



USE IMPACT IDLERS AT LOADING POINTS

Some of the shock of impact at such points is absorbed by these idlers, resulting in less strain both on the carcass and covers of the belt



MAKE USE OF AUTOMATIC SWITCHES

These switches will shut down the belting in case it breaks, in case of excess slipping on the drive pulley, or if the feeders or chutes choke up



REPAIR IMMEDIATELY CONVEYOR BELT DAMAGE

Unattended damage to the belt permits dirt and moisture to attack the fabric. Also, if the use of a damaged belt is continued, the impact and the rubbing passage of injured areas over idlers and pulleys will enlarge the damage. The damaged spot should be cut out soon as noticed, and new rubber vulcanized into the hole

Which is the best belt for you?

For Mining *(Metallic and Nonmetallic)*

Maltese Cross for especially severe service. Ajax for general heavy duty service, and Conservo for general light duty service. Exceptionally severe special conditions may require use of specially designed Hewitt-Robins belts such as Shock Pad, CR-50 and CR-70, Raynile and Super-Raynile, Ajax Underground and Monarch Neoprene fire-resistant belting.

For Metal Processing

Maltese Cross for exceptionally severe service. Ajax for general heavy duty service, and Monarch Neoprene for oily service. Maltese Cross Fiberglas Hot Material, Maltese Cross Fabric-type Hot Material and Hewitt Hot Service are especially designed for hot material handling.

For Public Utilities

Monarch Neoprene for oily service, Maltese Cross Hot Material and Hewitt Hot Service for hot material handling. Maltese Cross for especially severe service and Ajax for general heavy duty service.

For Food Processing

Canners and Packers and Hewlite for food handling, Monarch Neoprene for oily service, Ajax Rufftop, Conservo Rufftop and Conservo Transport for package handling. Monarch, Ajax and Conservo for grain and feed handling.

For Materials Handling

Conservo for portable conveyors. Ajax Rufftop, Conservo Rufftop, Conservo Transport and Hewlite for packaging conveyors.

For Chemical Processing *(Including Pulp and Paper)*

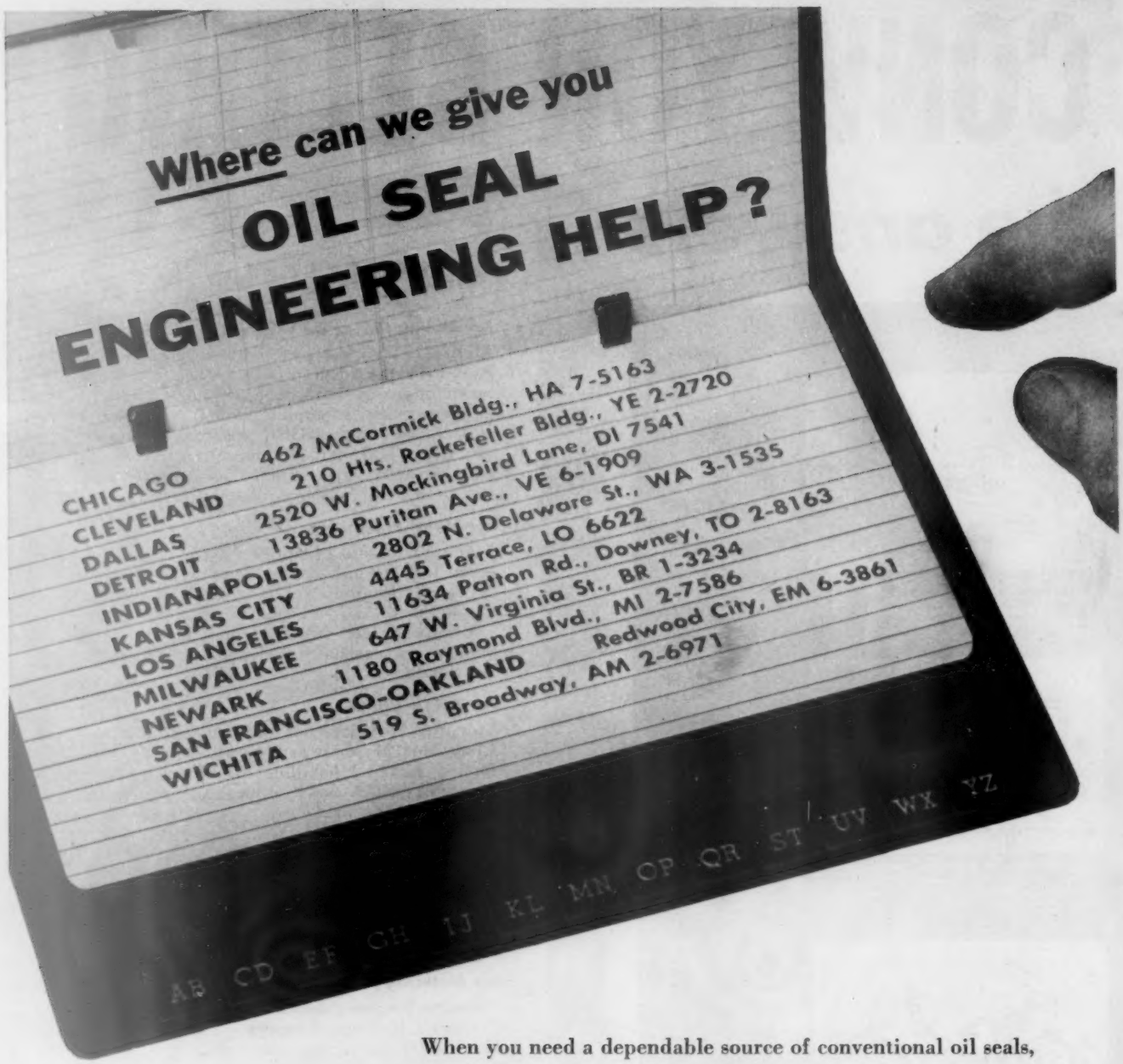
Maltese Cross for exceptionally severe service, Ajax for general heavy duty service, and Conservo for general light duty. Maltese Cross Fiberglas Hot Material, Maltese Cross Fabric-type Hot Material and Hewitt Hot Service are especially designed for hot material handling.

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For More Information Circle No. 204 on Inquiry Card—Page 17→

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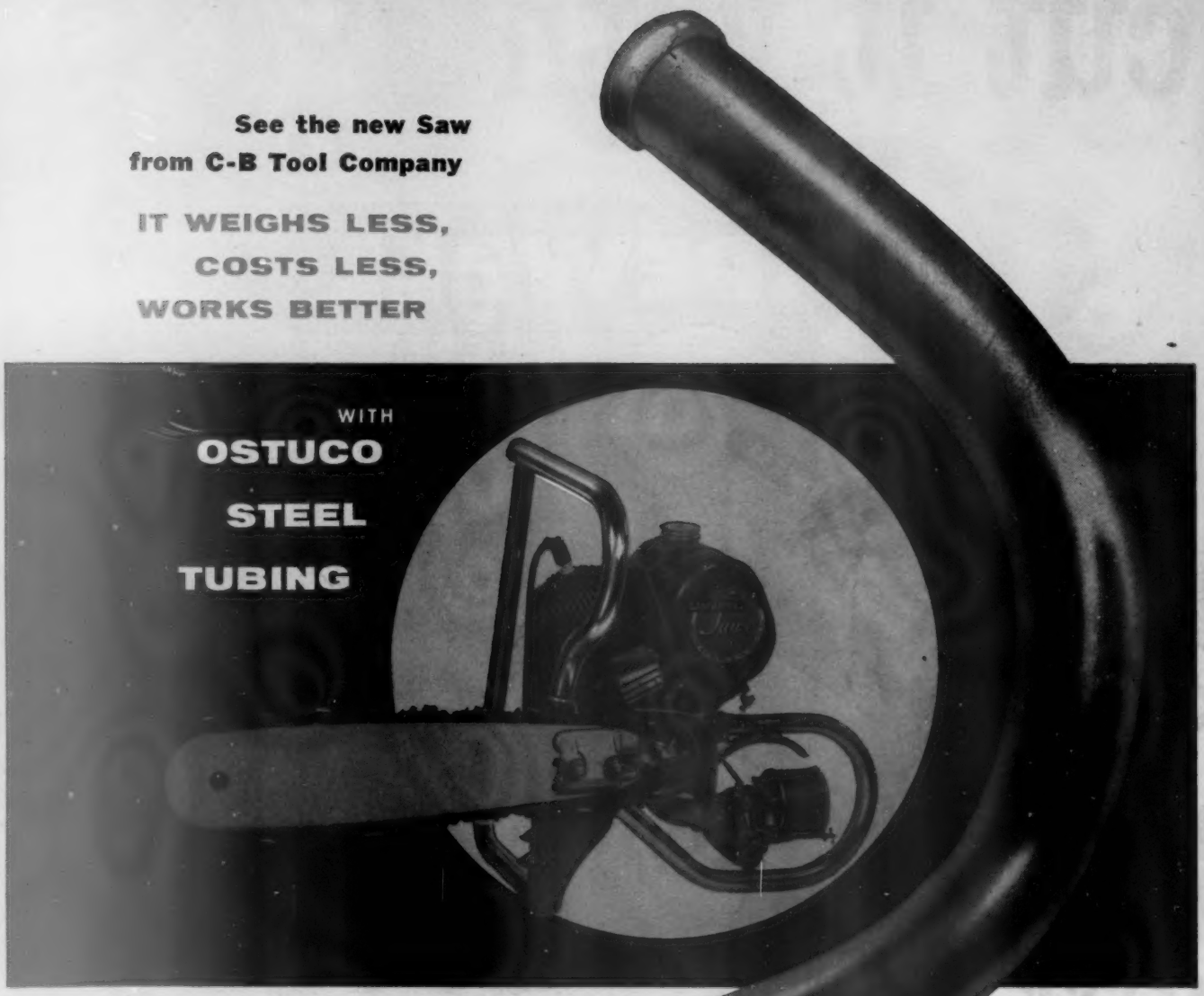
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See the new Saw from C-B Tool Company

IT WEIGHS LESS, COSTS LESS, WORKS BETTER

WITH **OSTUCO STEEL TUBING**



The C-B Tool Co. Story

It was easy! Engineers from C-B Tool Company, Lancaster, Pa. and OSTUCO in Shelby worked out a welded steel tubing component to replace a heavy, bulky oil reservoir and to serve as a handle for the new saw. See the difference this makes in the new Lancaster Model 400A chain saw:

- **Saves Cost—$4.25 on each chain saw!**
- **Saves Weight—3 pounds on each unit!**
- **Works better—Saw now has positive, continuous oiling instead of push-button oiling by the operator.**

Perhaps this story from C-B Tool has a message for you.

If you have trouble with see-sawing production costs and quality, OSTUCO may have the answer to your problems. Unique single-source service eliminates interplant shipment, reduces error, gives better production control. See about it . . . see OSTUCO! Contact the Shelby office or your nearby OSTUCO Sales Engineer for details.

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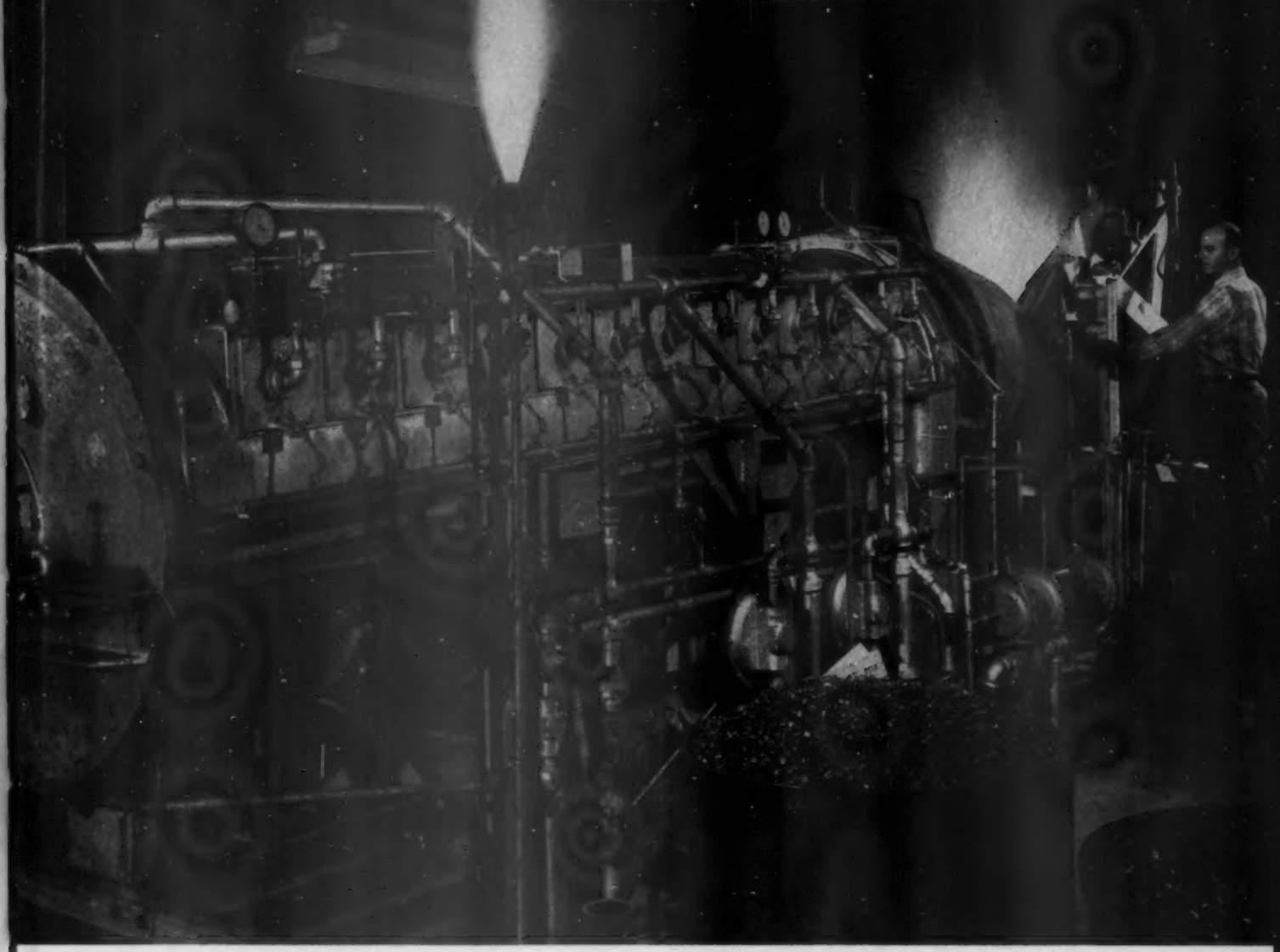
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For More Information Circle No. 205 on Inquiry Card—Page 17

For More Information Circle No. 206 on Inquiry Card—Page 17→

RB&W FASTENERS - *Strong Point of any assembly*



Gas chamber for fasteners that lengthens their life

CARBURIZING of fasteners is being done here . . . *GAS* carburizing. This method stands head and shoulders above the bath type treatment. It gives greater control of surface hardness, of quality.

Above, Gene Luzzi, has just loaded a hopperful of *Spin-Lock* screws into the chamber. Heated and then quenched under his experienced eye (11 years with RB&W), the screws emerge with deeper, more uniform case hardness, and controlled core strength. RB&W hinge pins, tapping screws and other fasteners get their longer life in this department.

If there's a better method or some extra special equipment that can help turn out the best fasteners possible, you're sure to find it in RB&W plants. With the most modern and complete facilities available, RB&W's skilled operators — many of whom are second generation RB&W men — can put their experience to best advantage.

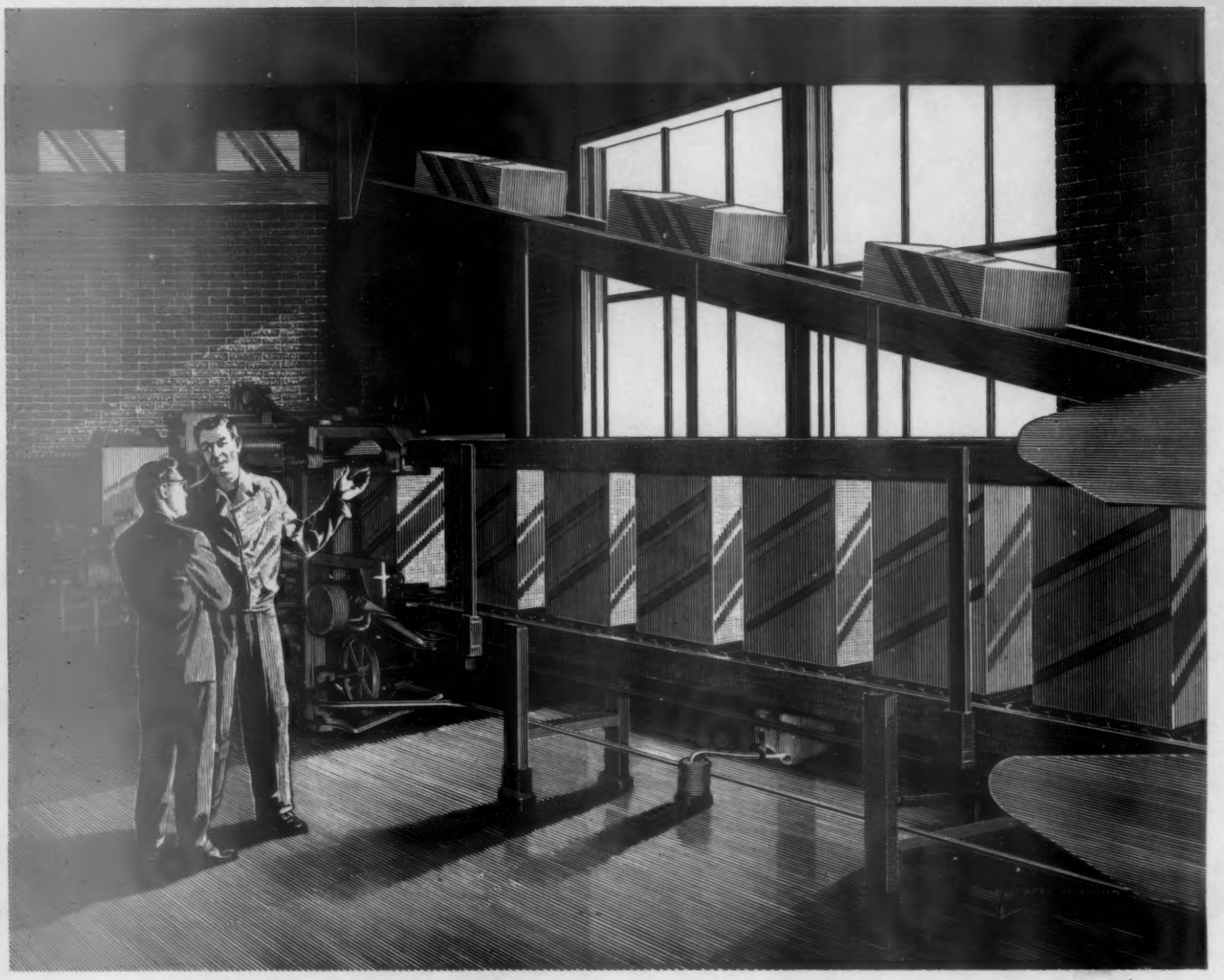
This combination of facilities, experience and quality control can't miss. It assures you more quality for your money . . . a reliable source of supply . . . and strong fasteners that never let you down.

Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N. Y.

R B & W

110th year

Plants at: Port Chester, N. Y., Coraopolis, Pa.; Rock Falls, Ill., Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Seattle. **Distributors** from coast to coast.



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DIVISION OF CROWN ZELLERBACH CORPORATION

For More Information Circle No. 207 on Inquiry Card—Page 17

One Danger in Purchasing Automation

YOU ARE HEARING a lot about automation in purchasing techniques, and you will be hearing a lot more. Don't discount it as visionary or remote. Automation is young, but it is here, and it is here to stay.

The fears most generally expressed on this score are that it will downgrade purchasing performance by substituting a formula for judgment and selectivity, and may tend to displace the purchasing function. These fears are groundless.

Automation in purchasing will never replace judgment and experience. It is simply a tool, to be used by those who develop the skills to use it. The man—in purchasing or in any other field—who doesn't take advantage of good new tools places himself at an unnecessary handicap.

And it is a useful tool. Here are a few of the things it has already accomplished for purchasing men:

It has provided them with more complete, accurate, and current inventory and requirements data on which to base their purchasing decisions.

It has given practical meaning to scientific order and stock quantity formulas where formerly the sheer labor of calculation outweighed the potential advantages of detailed mathematical determinations.

It has placed order writing on standard reorder items (up to 80% of a normal purchasing program) on an automatic time and labor saving basis comparable to the use of the repeating requisition.

It has speeded up internal purchasing procedures at virtually every stage.

It has eliminated vast areas of routine work and given purchasing men the time to devote to the more constructive aspects of their job.

And this is only a beginning.

There is just one real danger in purchasing automation. The complexity of the equipment and the mechanics of the methods will frequently dictate that the actual automated operations be concentrated and carried on in a central data processing department, serving many phases of the business, just as you may use a central stenographic department or centralized servicing of office machines. There will be a tendency—*if the purchasing man permits it*—to regard the mechanics of automation as the heart of the purchasing activity, rather than as the means of implementing purchasing policies and programs. This attitude will certainly be encouraged by the methods men. It is only where such reasoning prevails that purchasing will be downgraded and purchasing men will be hurt.

There is no reason to fear automation. There is every reason to explore its possibilities and use it to the fullest profitable extent—and to keep it in its proper perspective, as a purchasing tool.

Stuart F. Heinritz



A TICKET TO TOBAGO

—or just a glance at your kitchen shelf

It's hard to turn around without seeing an Ever Ready Label. Whether you are looking at the everyday products in your kitchen or proudly checking your luggage before stepping into a British West Indian Airways Viscount headed for a smart Caribbean resort, you'll see colorful, eye-appealing Ever Ready Labels —labels that demand and get attention.

Ever Ready Labels are found everywhere, calling attention to almost every type of product or service. Turning out more than 15,000,000 labels *a day*, Ever Ready produces every type of label to suit your needs.

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highlights



The International Business Machines Corporation, through its popular slogan —"THINK"—has done much to stimulate a constructive approach to business methods and problems throughout all industry. In managing its own affairs, IBM is an exponent of its own advice. The purchasing department of this large and growing organization is an example of imaginative policies supported by practical and efficient procedures. Our editors have made a full-scale study of this buying operation for your benefit. Their report starts on page 71. It is broken down into nine sections dealing with specific phases of the program, for convenience in reading and reference.

IBM's highly effective Follow-up System is simple and efficient in operation first of all because it is selective. It starts with a three-part classification of purchased items. Those that don't need follow-up don't get it. Important but non-critical items get routine attention with time-saving forms. Those that are critical to production schedules get the full treatment from the time the order is issued and at regular intervals in plenty of time to assure on-time delivery. With this arrangement, a minimum staff watches about 3,500 orders per month, and factory shortages are practically non-existent. See page 84.

Value Analysis is a company-wide activity at IBM, but is centered in a special group within the purchasing department. Here manufacturing know-how and procurement skill are integrated for cost reduction. By concentrating on high-cost and high-volume items, the company's purchased costs have been lowered by 6%. How does it work? Turn to page 86.

Every part and component used by IBM, whether a new item or one that is currently purchased or manufactured, is analyzed to get the right answer to the question: Shall We Make or Buy? There's a simple formula for this decision, implemented by a correspondingly simple work sheet. If purchase savings outweigh the costs incident to manufacture, the part is purchased, and vice versa. See page 89.

Economical Order Quantities are also mathematically determined, but the complicated formulas have been reduced to easy-to-use tabular form. You can benefit from this procedure (described on page 90) and from the other sections detailing IBM's methods.



Another helpful and effective system is Acushnet's 3-part Materials Management program. (See page 112). Based on the fundamental thesis that "Materials Are Money", it combines (1) determination of economical order points and quantities; (2) a single record of inventory, consumption, and purchases, at the control center in the purchasing department; and (3) efficient storage and material handling methods coordinated with unit loads for vendors' shipping and factory issue. You'll find many interesting and money-saving suggestions in this practical working system.

How well do you really understand Standardization? This basic principle applies to everything you buy and everything you do. The analysis on page 109 will help you to use standards more effectively as a purchasing and administrative tool.

Don't overlook these regular monthly departments, compiled for your information: the Washington Report (page 13); New Catalogs (page 17); New Equipment and Products (page 138); News of Your Suppliers (page 22), of Association Activities (page 198), and of Men in Purchasing (page 248); Keeping up to date on such developments makes for better buying.

next month:

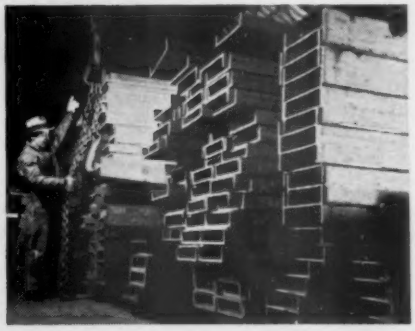
Don't miss the important May issue —
A Complete Data Book on Cost Reduction

STEEL BUYERS GUIDE
to Ryerson Products and Services

You can draw on your nearby Ryerson plant for an almost endless number of products and services—and the more you concentrate your purchases at one source, the more you save. Ryerson products not pictured here include: Re-bars, expanded metal, grating, plastic pipe, machinery and tools, etc. See your Ryerson catalog for complete list and write for descriptive literature.



BARS—The most complete range of types, shapes and sizes as well as the largest tonnage.



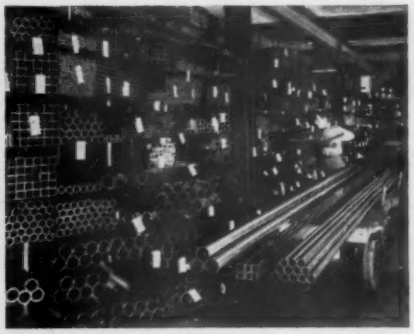
STRUCTURALS — I-beams, H-beams, channels, angles, tees and zees—all to ASTM spec. A-7.



PLATES—14 types including special low carbon plates for forming and welding, leaded E-Z-Cut, etc.



SHEETS & STRIP—More than 20 different types in pattern sizes, cut-to-order sizes, strip coils, etc.



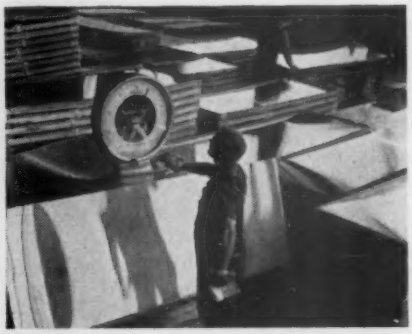
TUBING—Seamless and welded mechanical tubing, fluid power tubing, structural and boiler tubes, etc.



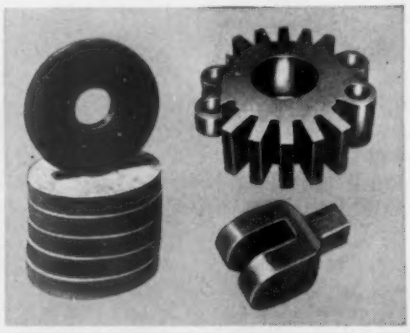
C. F. BARS—Cold finished steel for every use: screw steel, Ledloy, accuracy stock, machinery steel, shafting, etc.



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For More Information Circle No. 209 on Inquiry Card—Page 17



Imaginative Buying Methods at IBM

by D. S. Ammer

THINK is a one-word slogan International Business Machines Corporation has made famous. IBM's **THINK** Magazine is renowned for its sympathetic commentary on scientific and humanitarian progress. **THINK** signs hang in the offices of every IBM executive. They can also be found in the accounting departments of many of the company's customers.

IBM's purchasing executives have effectively applied their company's slogan to their specific jobs. This is shown by the fact that they've adopted just about every known scientific purchasing technique. In addition, they've made a number of innovations in the purchasing field. IBM top management recognizes purchasing's important relation to profits. According to Company President Thomas J. Watson Jr., "those who purchase for IBM have some of the most important jobs in the company." He further pointed out that the "purchasing of material, parts assemblies, equipment, supplies, and services amounts to approximately 40% of the IBM sales dollar."

IBM buys about $200 million worth of materials, supplies, and services each year. Most of the money is spent at its three upstate New York manufacturing plants in Endicott, Poughkeepsie, and Kingston. But efficient purchasing is still essential for the company's smaller plants at Washington, D. C., San Jose, California and Greencastle, Indiana. In addition, purchasing must keep the corporate headquarters in New York City and a nationwide network of sales offices stocked with necessary supplies.

IBM is one of the world's largest manufacturers of a number of products including accounting machines, electronic data processing machines, electric typewriters, electronic and electric time and program control systems and various related items. It's big business; it demands big purchasing to meet its needs.

Today, organization for big purchasing means decentralization. Theory behind decentralization is that a given organization can get so big that no one man can do an adequate job of running it. The obvious solution is to break the big unit up into a number of

PAs Meet Monthly

IBM purchasing executives iron out mutual problems at regular meetings held at various company plants. A recent meeting at the Kingston plant was attended by, left to right: B. A. Easton, D. H. Covert, R. D. Venner, R. A. Kelly, Vice President W. L. Lewis, J. M. O'Hehir, L. T. Tilly, Assistant Director of Purchases Harry J. Moore, Jr., and J. A. Crane.



semi independent smaller units. That's roughly how purchasing at IBM is organized.

Line and Staff

Top man in IBM purchasing is W. L. (Bill) Lewis, whose title is vice president-purchasing. Though Bill Lewis is a vice president, he actually directly supervises but two people—Harry J. Moore Jr., the assistant director of purchasing and a secretary. A set-up like this is basic to the concept of decentralization. Mr. Lewis isn't supposed to spend his time on the administrative chores inherent to running a large department. Instead, he works on formulation of over-all purchasing policies and also acts as purchasing's representative in top management. He meets regularly with plant purchasing agents to help them iron out mutual problems. He reviews regular commitment reports from the plants and is also apprised of the progress of any new projects on which plant purchasing agents are working. He must also help decide "who buys what" in cases where there can be duplication of effort between individual plant purchasing departments. Because of its tremendous dollar volume, Mr. Lewis also handles one buying job. He negotiates company-wide contracts for the paper used in the hundreds of millions IBM cards the company sells each year.

With the single exception of paper, all of the company's buying activities come under the direction of plant purchasing agents. Though each plant purchasing agent reports functionally to Mr. Lewis on matters of purchasing policy, his actual boss is the plant manager. For example, Morris O'Hehir, purchasing agent for the Poughkeepsie plant, works for W. J. Mair, vice president in charge of the Poughkeepsie operation.

Plant P.A.'s Important

In every case, IBM plant purchasing agents do more than just head up a buying function. They actively participate in the grief and glory incident to the operation of a complex manufacturing plant. IBM plant PAs have earned the respect and cooperation of their counterparts in engineering, manufacturing, production buying departments at quality control. They're consulted about all problems that concern them or which they, through their special knowledge, can help solve. Often, they're consulted just because it's felt "purchasing should be represented."

A Case in Point

Here's one example of 'purchasing' status at IBM: A plant division manager called in an outside consultant to help solve a highly technical manufacturing problem. He set up a meeting so that the consultant could review the problem with manufacturing and engineering personnel. Just as the meeting was going to start, the division manager noticed that no one from purchasing was present. He called the plant PA and asked him if he would mind sitting in on the meeting and contributing to it. The meeting was held up until the PA arrived even though it did not involve a specific purchasing problem.

About 90% of IBM's purchases are made at the company's manufacturing plants in Endicott, Poughkeepsie, and Kingston. Actually there are five separate production control, accounting, and these three plants. Each plant has a separate purchasing department for civilian products. There are also individual departments to handle purchasing for defense projects at Endicott and Kingston. A heavy part of IBM's pur-

Imaginative Buying Methods

IBM's Purchasing Vice President



Before becoming vice president in charge of purchasing in October, 1953, W. L. Lewis was vice president in charge of IBM's Endicott plant. Mr. Lewis is a veteran IBMer. He joined the company shortly after receiving his mechanical engineering degree from Cornell in 1922. Prior to his appointment as a vice president in 1949, he had held a number of responsible positions in manufacturing and engineering including that of general manager of IBM engineering and production.

The Vice President's Assistant



IBM's new assistant director of purchasing, Harry J. Moore, Jr., is a newcomer to purchasing. Prior to his present appointment in January, 1956, Mr. Moore was manager of the Personnel Division at IBM's Endicott plant. A graduate of the California Institute of Technology, Mr. Moore has held a number of administrative positions in sales, production, and manufacturing engineering since joining the company in 1948.

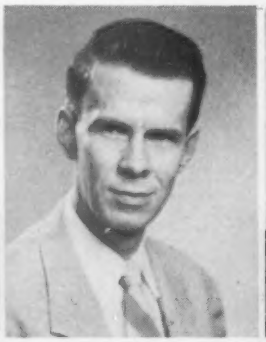
IBM's Five Top Plant Purchasing Agents



D. H. Covert—Endicott



J. M. O'Hehir—Poughkeepsie



R. A. Kelly—Kingston Defense Purchasing



B. A. Easton—Typewriter Division



R. D. Venner—Military Products Division, Endicott

chasing responsibility falls upon the five men heading these departments.

Growth Brings Changes

The fact that only two of these five departments could be called "old and established" shows how fast IBM is growing. The departments at Endicott and Poughkeepsie that handle purchases for civilian products for these plants have been in existence for a number of years. Defense purchasing for the new plant at Kingston is just one year old. The other two departments are so new that they can't even be discussed in detail in this article. One of them handles purchasing for IBM's MA-2 air borne computer project. The other handles the buying for the company's electric typewriters. Typewriter production is being transferred from the company's Poughkeepsie plant to the new Kingston plant, so it was necessary to set up a separate purchasing department to handle the project.

Over-all Purchasing Policies

In general, each plant PA operates his department as if the plant it serves were a separate business. However, he works within the framework of general policies decided upon at monthly meetings with Purchasing Vice President Lewis and other plant PAs. In addition, there is frequent informal liaison between individual PAs to work out joint problems. A purchasing policy manual helps guide plant PAs on general corporate buying practices.

PAs Not "Rubber Stamps"

But, it should be emphasized, plant PAs don't necessarily organize and operate their departments in completely uniform fashion. They're perfectly free to make adaptations to suit their particular needs. For example, expediting at Endicott is handled by a separate centralized section within the purchasing department. Purchasing Agent D. H. Covert believes that the job can be done most efficiently this way. He likes to free his buyers from as much routine detail as possible.

While Purchasing Agent O'Hehir at Poughkeepsie certainly doesn't want his buyers to get involved in a lot of unnecessary detail work, he has a different approach to the expediting problem. At Poughkeepsie, the buyer, assistant buyer, and expediter work together as a three-man team. Mr. O'Hehir believes the job gets done most efficiently if organized this way since it permits a closer working relationship between expediter and buyer. Both systems work, obviously.

There are other differences that illustrate IBM's policy of organizational flexibility. For example, at Poughkeepsie, purchasing has the "extracurricular" job of making all hotel and transportation reservations for plant executives and customer personnel that visit IBM to learn how to use the company's products. At Endicott, reservations are handled by the personnel department.

Such differences between the individual plant purchasing departments will likely continue to exist as long as each department continues to do its job efficiently. IBM does not believe in uniformity for uniformity's sake.

Teamwork Still Important

Though there are differences in organization and procedure, this does not mean that various departments do not work together closely. None of the PAs or buyers are prima donnas. They all recognize that their basic job, is to help make money for IBM over-all. Plant buyers know their counterparts at other IBM plants; they frequently exchange information informally on sources, prices, etc. PAs work together to avoid one of the major pitfalls of decentralized purchasing—dilution of buying power. When it is economically advantageous, every major commodity that is used by several plants is bought for the entire corporation by the plant with the greatest usage. For example, Endicott buys standard stationery and forms for the entire corporation. Poughkeepsie buys certain vacuum tubes both for itself and Endicott.

Introducing New Methods

IBM has a practical approach to research on new purchasing procedures and practices. One plant acts as "guinea pig." If the new method is successful, the plant purchasing agent responsible for it makes a detailed report so that other plants can adopt it. This naturally eliminates duplication of effort. For example, IBM's purchasing policy manual was first written up in draft form at Endicott. Then it was reviewed by other plant purchasing agents to see if they had any additions or corrections.

Currently, Poughkeepsie and Endicott are working independently on new methods for automating purchasing paperwork. Poughkeepsie is experimenting with procedures for automatically typing purchase orders from data transmitted by a giant 702 electronic computer. Endicott is working on a method to automate the writing of requisitions. In the future, it is likely that all IBM plants will be using some version of one or the other techniques for reducing clerical costs.

General Policies Uniform

Though there's plenty of elbow room for flexibility in IBM purchasing, there are also a few policies to which each plant must strictly adhere. One of them covers reciprocity. A lot of IBM's vendors are also company customers. Reason for this is sim-



"IBM plant purchasing agents do more than just head up a buying function. They actively participate in the grief and glory incident to the operation of a complex manufacturing plant." Here Purchasing Agent J. M. O'Hehir meets with his boss W. J. Mair, vice president in charge of the Poughkeepsie plant.

ple: IBM is such a big factor in its field that practically every manufacturing company is a customer, (if only for electric typewriters or time clocks).

However, if a salesman expects special treatment from purchasing because his company spends so many dollars per year on IBM equipment, he's in for a shock. He'll get a courteous reception but his chances of getting an order are no better than those of a vendor who uses products made by one of IBM's competitors. IBM purchasing selects vendors purely on the basis of their ability to do a job for IBM on quality, delivery, and price. This policy has been strictly enforced since 1914 when Thomas J. Watson became president of the company. Mr. Watson has always demanded that company salesmen sell IBM products purely on the basis of their usefulness to the customer. He also wants purchasing to select vendors exactly the same way—entirely on the merits of the products they sell IBM. IBM's phenomenal growth is a testimonial to the wisdom of a very firm no-reciprocity policy.

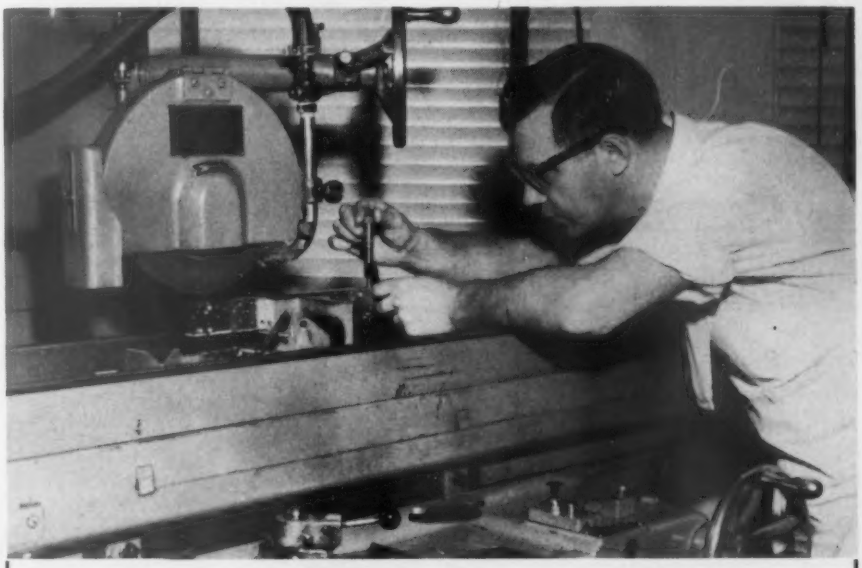
Building Vendor Relations

Although it frowns on reciprocity, it should be emphasized that IBM is an extremely sales conscious organization. Mr. Watson was an outstandingly successful salesman before he joined IBM. His sales-mindedness has influenced the entire IBM organization. Purchasing's attitude is that it is selling IBM indirectly every time a buyer interviews a salesman. A company's attitude is bound to be influenced to some extent by how its salesmen are treated. If IBM buyers listen sympathetically to a vendor's story and always treat the vendor fairly, an IBM salesman will likely get a more friendly reception when he calls upon the vendor. This does not mean that the buyers extol the virtues of IBM products to salesmen that call (except perhaps in occasional bursts of enthusiasm). Instead, purchasing sells IBM by making it a nice company for suppliers to deal with.

Here are two specific examples of good vendor relations:

R. A. Kelly is purchasing agent for the top secret Air Force "Project Sage" at Kingston. The product he buys for is an extremely complex one. To do a successful job, Mr. Kelly needs the wholehearted cooperation of all his suppliers. No one knows this better than Bob Kelly. Recently, he improved vendor relations with a "Supplier Day." All of the major vendors were invited to visit the plant and to see and hear as much about the "Sage" project as security regulations permitted.

A salesman recently made his first call at IBM's Poughkeepsie plant. He located the buyer he wished to contact in the plant's welcome booklet. Unfortunately, the buyer was out of town. The assistant buyer wasn't available either nor was the department head. But the salesman wasn't turned away with a "sorry, no one can see you." Purchasing Agent O'Hehir met the salesman and welcomed him to IBM. Mr. O'Hehir insists that someone in purchasing see every salesman that calls, without making him wait an unreasonable length of time. If no one else is available, Mr. O'Hehir will see the salesman himself. Though he doesn't do any actual buying, Mr. O'He-



One of IBM's 10,000 Suppliers . . .

IBM's vendors range in size from multi-billion dollar corporations to shops like Cavalier Gage Co. Cavalier's owner, D. A. Cavalieri, reports that he has "been supplying gages, jigs, fixtures and production parts to IBM since 1946, during which time we have grown from our original one-man shop to our present 26 skilled employees."

He says that his relationship with IBM has been a happy one. He gives purchasing much of the credit for this. In fact, he says that while IBM buyers "demand precise workmanship and quality parts at all times, they have always been generous with their time, ideas, and knowledge which, many times, have made it possible for us to fill the order." Mr. Cavalieri is especially appreciative of the willingness of IBM buyers, engineers, and inspectors to "share their 'know-how' and new methods with a small vendor."

Because of the growth of his business, Mr. Cavalieri's job is now largely administrative. However, he still likes to spend as much time as possible working around machines—just as he is in the photo above.



"To do a successful job, Mr. Kelly needs the wholehearted cooperation of all his suppliers. No one knows this better than Bob Kelly." Here he greets a supplier representative in the Kingston lobby.

hir also likes to meet every new supplier just to make him feel welcome.

Another Firm Policy

Closely related to its thinking on reciprocity and vendor relations is the IBM policy on gratuities from vendors. This policy can be expressed in one word: *no*. Buyers are expressly forbidden to accept Christmas presents from suppliers or, for that matter, to go "out on the town" with supplier salesmen. The only exceptions to this rule are gifts that are essentially advertising—mechanical pencils engraved with the vendor's name, calendars, etc. If a salesman is visiting IBM during the lunch hour, he can eat in the cafeteria as a guest of the company. The no-gift policy is, of course, consistent with Mr. Watson's philosophy that products should be sold strictly on their own merits. Mr. Lewis makes this quite clear in a letter he sends to suppliers each year advising them that IBM does not want Christmas presents from vendors. In this letter he also, in the holiday spirit, extends Season's Greetings and thanks suppliers "for the quality of products and services rendered, as well as for the fine cooperation in meeting our schedules."

When IBM had just a few hundred employees, Mr. Watson made a special effort to know each employee personally and understand his problems. Even though this is now impossible (the company has over 50,000 employees), Mr. Watson's human relations philosophy still prevails. This "family" approach has meant more than just good labor relations. To purchasing it has meant harmonious and cooperative relationships with other departments. If purchasing is to have any misunderstandings, they're probably most likely to be with engineering and quality control.

Probably the most frustrating experience a buyer can have with quality control is when an inspector rejects a shipment and the vendor insists it's O.K. The buyer is square in the middle. He wants quality goods but he also wants to be completely fair to the supplier. At IBM, there are quality engineers whose job it is to make sure vendors are completely familiar with company quality standards. A book of specifications helps guide vendors on "fine points" in quality not noted on blue prints. The excellent purchasing quality control relationship is described in more detail in another part of this article.

Cooperating With Engineering

The most important cause for friction between purchasing and engineering is "back door" selling. Enterprising salesmen convince engineers of the superiority of their product. This, in turn, results in restrictive specifications. One IBM purchasing executive confided that he is fully aware that the "engineer will select what he feels is the best

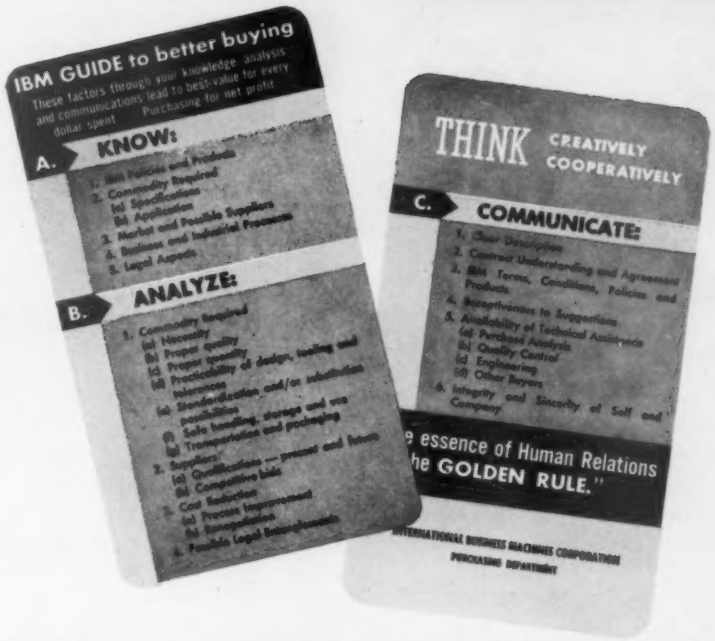
Close working relations with manufacturing are basic to a good purchasing job. Written reports won't do the job completely. Here, at Endicott, W. A. Kipp, manager of buying in general purchasing, exchanges ideas with Joseph Dearie of manufacturing.



item." But this did not bother him. Engineering fully appreciates and understands purchasing's prerogatives in source selection. It will often test brands of certain manufacturers. If they are satisfactory, the brand name will sometimes appear on the print. But the specification also includes the clause "or equivalent." Purchasing is completely free to solicit competitive manufacturers of similar products. Competition isn't stifled by restrictive specifications at IBM.

However, it should be emphasized that purchasing also respects engineering prerogatives at IBM. And buyers do everything they can to help engineers do a better job. Engineers can easily arrange to visit a vendor's plant by just calling one of the buyers. Buyers often send engineers articles they see on new products, etc. which they feel might be of interest. In fact, purchasing goes one step further. When they're available, it arranges for vendor's traveling product shows to visit so that all interested IBM personnel (including engineers) can see new product developments.

General purchasing policies and practices must be applied if they are to have any meaning. They're put into action at the plant purchasing level. Each of IBM's three major plant purchasing departments—at Endicott, Poughkeepsie, and Kingston—must handle two basically different buying jobs—general purchasing and subcontracting. Logically enough, each has separate sub-departments to handle the job. The subcontracting group handles work on a lot of production parts and assemblies. General purchasing buys the balance of the production parts and all of the materials and supplies.



Each IBM buyer has a copy of this "GUIDE to better buying." The card is small enough for a billfold; both sides are shown above.

Subcontracting Important

IBM has grown so rapidly that production needs have outpaced plant capacity. As a result, purchasing must subcontract a great deal of work which would otherwise be done in the shop. So each of the three major plant purchasing departments has a separate group to handle subcontracts. Subcontracting itself is big buying. It amounted to about $50 million last year in all IBM plants. Sometimes entire parts and assemblies are subcontracted. Often just a single operation or a group of operations on a part are subcontracted.

Subcontract buying calls for special know-how. It also creates special problems. That's why it's handled by a separate group within purchasing at IBM. A lot of subcontract buying is "rush." Schedules change or machine load in the shop is greater than anticipated. So buyers must be able to place work fast in many cases. They must be able to analyze process sheets rapidly then find vendors with the equipment needed to make the part. Though they usually get competitive quotations, sometimes there isn't enough time. If they place work on a time and material basis, buyers must know enough about processing costs to negotiate good value. They must also know tooling—company owned tooling consigned to vendors must fit without rework if premium costs are to be avoided.

Buying Individual Operations

There are actually two types of buying in the subcontract group. A number of parts and assemblies are bought on a semi-permanent basis. They're usually handled just like any other purchased item. Much tougher to handle are operations on individual parts which must be placed on the outside because of a temporary lack of capacity in the shop. If production control can't schedule a given lot in the shop, it sends the process sheet and the shop order to purchasing. The buyer scratches out the shop

department number on the process sheet and substitutes the purchase order number. He then gets quotations (if there's enough time) and, ultimately, places the order.

The process sheet shows the approximate amount of machine time needed for each operation. This helps the buyer ascertain if his price is a good one. To locate tooling for the part, the buyer checks a central consignment file. Often the tooling is already in the possession of a vendor who handled the job for a previous lot. If the previous vendor did a satisfactory job, the buyer will usually give him the same job again.

Purchasing used to have one problem which it has now licked. Not realizing how costly paperwork was, the shop was occasionally prone to request subcontracting on small batches of work worth $50 to $100. In such cases, it pays to adjust machine loading so the work can be done in the shop. Now that manufacturing is aware of the problem, it limits its requests for subcontracting to a minimum of 40 hours work.

Subcontracting is common to every IBM manufacturing plant as are the other purchasing practices and policies discussed so far in this article. However, each of the plant purchasing departments has special features which are unique to that plant.

Purchasing at Endicott

IBM's biggest and oldest plant is in Endicott. This plant makes time clocks, various types of punched card equipment, and the 650 electronic data processing machines. The plant purchasing agent, D. H. Covert, is a veteran IBMer. He started in the company's accounting department 35 years ago and has been in purchasing since 1927. Mr. Covert is responsible for all purchasing for Endicott's manufacturing operations. (Purchasing for the research laboratory is a separate department under L. R. Tilly.)

Mr. Covert actually has a bigger job than many purchasing vice presidents in smaller companies. He supervises about 90 people who issue about 50,000 orders per year for over 20,000 different items. Annual volume of purchases exceeds $80 million.

Mr. Covert has divided his department into three separate buying groups. The biggest is naturally general purchasing. Besides its buyers, it has three separate staff sections—expediting, clerical, and purchase analysis.

At Endicott, the expediting group functions as a central unit so as to relieve buyers of detail work. Its procedures and practices are described later in this article. The clerical group is also designed to free buyers for more creative activities. It handles typing of purchase orders and inquiries, sorting of mail, and also keeps a central file so buyers need keep only current work on their desks. Purchase analysis is only about two years old at Endicott as a formal program. But it actually isn't new. Mr. Covert had an informal cost reduction group for a number of years prior to the start of the purchasing analysis program. However, the formal program has been a profitable one. Its accomplishments and techniques are described in more detail in another section of this article.

An Informal Meeting in Endicott . . .



Like other IBM purchasing agents, Endicott Purchasing Agent Covert believes frequent conferences with his staff can keep the department running smoothly. Here, he leans over the conference table in his office and exchanges ideas with (from Mr. Covert's left): S. A. Coles, project manager, sub-contract purchasing; M. R. Craver, project manager, tool & equipment purchasing; S. D. Reed, manager, tool & equipment purchasing; W. A. Kipp, manager of buying, general purchasing; and J. L. Callahan, manager, general purchasing.

Purchasing at Poughkeepsie



J. G. Hern—assistant to purchasing agent



W. M. Paradise—assistant to purchasing agent



W. A. Malloy—manager of EDPM purchasing



J. H. McManus—manager of purchase analysis



R. B. Rauer—manager of EAM buying and expediting



T. H. Ferry—manager of sub-contract purchasing

IBM's Poughkeepsie operations have expanded so rapidly, largely due to increased production of the new electronic data processing machines that electric typewriter production is now in the process of being transferred from Poughkeepsie to Kingston. IBM has created a separate Electric Typewriter Division with its own purchasing department headed by A. B. Easton. Mr. Easton's newly organized department is still in Poughkeepsie but will soon move to Kingston. Because of its newness, it is not possible to review Mr. Easton's department in detail in this article.

Besides typewriter purchasing, there are actually three other independent IBM purchasing departments in Poughkeepsie. Two of them handle purchasing for engineering departments. One, under J. A. Crane, does the buying for Poughkeepsie's general research lab. The other, under H. A. Olson, handles purchases for engineers working on IBM's "Project High" which is the development of computing equipment for "SAGE"—the continental air defense network.

By far the biggest purchasing operation in Poughkeepsie is the department that buys for manufacturing operations. It is headed by J. M. O'Hehir. By IBM standards, Mr. O'Hehir isn't an "old timer." But he is a good example of the opportunities available in IBM purchasing. Mr. O'Hehir started as an expediter at the Poughkeepsie plant in 1942 and worked his way up in the department through successive promotions to his present job.

Mr. O'Hehir's operation is almost identical in size with Mr. Covert's at Endicott. Purchasing at Poughkeepsie also issues about 50,000 orders per year worth about $80 million. Mr. O'Hehir's organization, however, differs from Mr. Covert's in a number of ways. One minor difference is

Welcome to IBM . . .

IBM's Endicott, Poughkeepsie, and Kingston plants each have welcome booklets. Besides listing whom to see in purchasing, the booklets show how to get to the plant, indicate security rules, and list facilities available to visiting salesmen.



IBM's Policy—

Treat Vendors Right

It is the policy of IBM to be fair in its transactions with vendors. The buyer has a responsibility to maintain this policy. The following considerations must be observed in this respect.

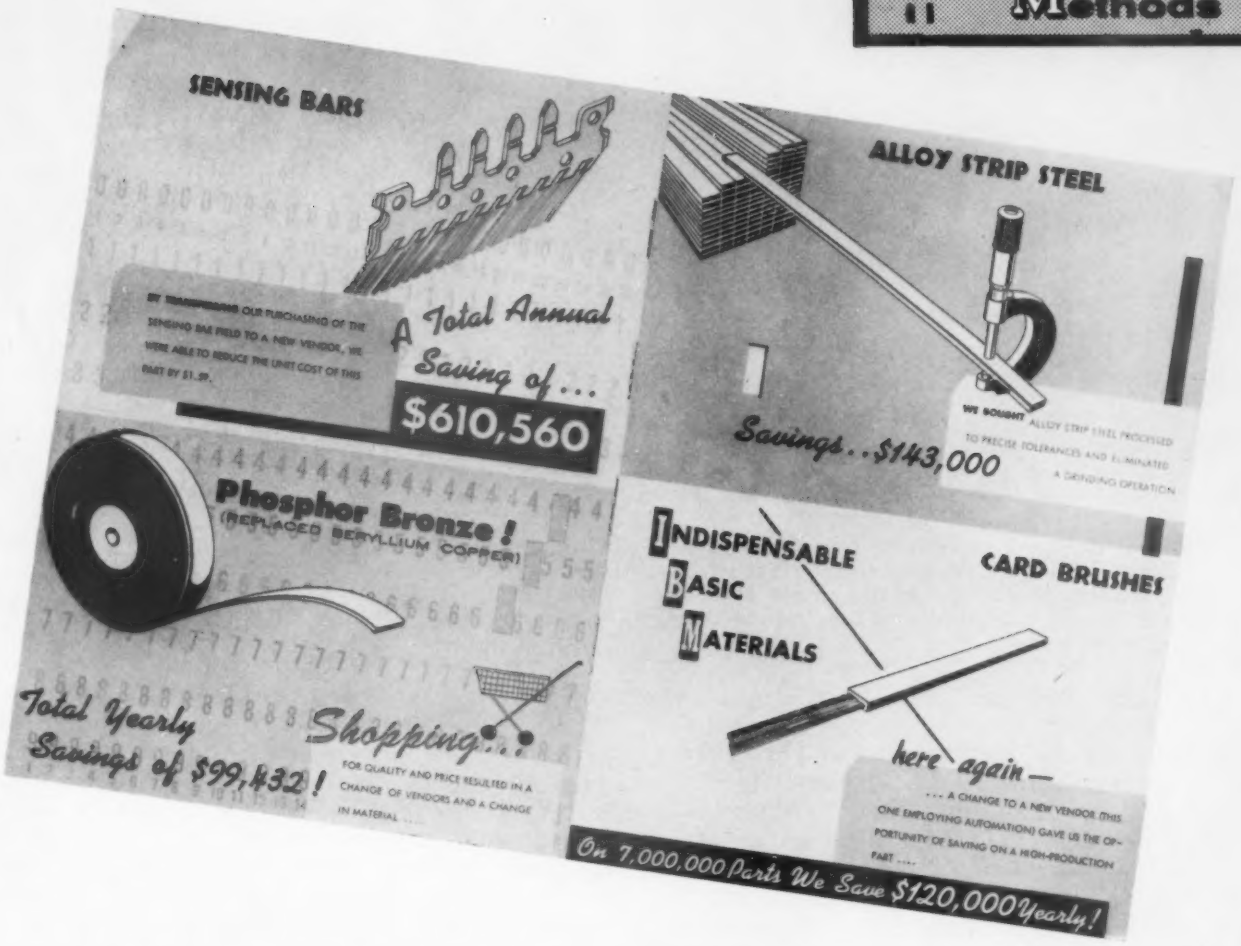
1. Make buying specifications clear and reasonable. Avoid impossible or unnecessary specifications and direct attention to potential problems.
2. Show consideration for the vendor's problems and cooperate with the vendor in solving these problems whenever possible.
3. Be courteous when interviewing salesmen and extend to them the opportunity for a complete and fair hearing on any subject justified by the nature of their products.
4. Accept or reject a vendor's products without discussing the relative merits of such products with other vendor representatives.
5. Maintain open and fair competition.
6. Do not take advantage of a vendor's error.
7. Discourage revision of quotations after submission. Insist on receiving the best price first. If circumstances justify a revision of quotations, offer each bidder the opportunity to re-quote.
8. Avoid the rejection and return of petty items or for petty reasons.
9. Avoid unnecessary expense to vendors when returning materials.

—IBM Purchasing Manual

titles. The head of each of the buying groups reporting to Mr. Covert is called a "project manager." The counterpart in Poughkeepsie is called an "assistant to the purchasing agent."

There are other differences. At Endicott, tool and equipment buying is done by a separate group; at Poughkeepsie it's part of the subcontract group. Buyers at both Endicott and Poughkeepsie specialize in certain commodities. For example, one buyer might handle die castings used in a number of different products. There is a tendency at Poughkeepsie, however, to break up buyers into product groups. There are separate buying activities for defense work and for electronic data processing machines. This does not mean that Mr. O'Hehir does not believe as strongly as Mr. Covert in the principles of having buyers specialize in certain commodities. It's just that there are special reasons for the two separate groups.

Imaginative Buying Methods



At IBM's Endicott manufacturing plant, key departments periodically issue general "Manufacturing Reports" describing their activities and accomplishments to other members of the IBM organization. Purchasing recently devoted such a report to its cost reduction program. On the last page of the six page report it made this point clear: "The Purchasing Department at IBM Endicott is grateful to all Divisions of the Endicott IBM Organization whose wholehearted cooperation has effected these impressive savings."

The reason for separate defense buying groups is quite obvious. Government contracts are subject to audit and costs can be more precisely allocated if buyers handle nothing but defense items. Also, buying problems in defense are sufficiently different from civilian jobs that there is little to be gained by integrating the two.

Reason for a separate purchasing group for electronic data processing machines is the nature of the product. These machines are IBM's newest and most complicated. Getting them into production has been a tough job for all departments concerned. Technology in the electronic computer field is progressing so rapidly there is need for extremely close teamwork between purchasing and engineering. IBM management could foresee this problem when it started the program, so it organized it as a semi-independent division with its own purchasing, engineering, production control and other departments. Mr. Malloy, who heads purchasing, still reports to Mr. O'Hehir, but he naturally must work very closely with the manager of the data processing machine project.

Like Endicott, there are separate general purchasing and sub-contract groups in Poughkeepsie. The only important difference is that Endicott has a central expediting section while Mr. OHehir at Poughkeepsie believes that expediters should work with buyers and assistant buyers as part of a three-man team.

Purchasing at Kingston



"Prize for the most attractive purchasing offices at IBM should go to Kingston." Buyers and assistant buyers work together in semi-enclosed offices that assure freedom from unnecessary interruptions and privacy when interviewing supplier salesmen.

The prize for the most attractive purchasing offices in IBM should go to Kingston. The Kingston plant is IBM's newest and most modern; parts of it are still under construction. In keeping with the age of the plant, R. A. Kelly, the PA for defense products at Kingston, is one of the "young Turks" of IBM purchasing. Just 30 years old, Mr. Kelly joined IBM eight years ago as an expediter shortly after he got out of the Air Force. Both because of his ability and because of the opportunities created by IBM's tremendous post-war expansion, Mr. Kelly advanced rapidly at Poughkeepsie. He was one of Mr. O'Hehir's key supervisors before being promoted to his present job.

Starting a purchasing operation from scratch takes purchasing know-how. It also demands the energy of a young man. Bob Kelly has both but he still feels he was fortunate in being able to start at Kingston with a nucleus of trained buyers transferred from Poughkeepsie and Endicott. Even then, he still had to hire and train a large number of new people to bring his department up to its present strength of 78 people.

For a long time, Mr. Kelly actually had two jobs. One was to supervise the purchasing for the top-secret computer IBM had contracted to design and build for the Air Force. The other, of course, was to build an organization to handle the job. The latter job is pretty much completed. The former is by no means done—a lot of headaches lie ahead. An excellent start has been made, however. Currently, Mr. Kelly's department is issuing about 3,000 purchase orders monthly and work with about 40,000 different part numbers.

Since purchased costs are a heavy percentage of total manufacturing costs, Mr. Kelly is already starting a purchase analysis program. Long range cost reduction projects are hampered by the thousands of engineering changes inherent to the development of the computer (which is likely the largest and most complicated ever built). However Mr. Kelly feels that, even with this handicap, purchase analysis will more than pay its own way.

Since Mr. Kelly came from Poughkeepsie it is not surprising that there is considerable similarity in the organization of purchasing at the two plants. There are separate subcontracting and general purchasing groups, etc. But there are also differences. Both plants are subject to IBM audit of records. However, Mr. Kelly at Kingston must be doubly conscientious in maintaining orderly and complete files. He is, of course, subject to Air Force audit. If business is not given to the low bidder, Mr. Kelly makes sure the reason is

Kingston Has Two Assistant Purchasing Agents . . .



R. N. Sweetland is in charge of sub-contract purchasing.



G. B. Baugher heads the plant's general purchasing group.

Imaginative Buying Methods





Diversified manufacturing demands diversified purchasing. At IBM's Endicott plant, manufacturing operations vary from heavy machining to careful assembly of complex finished components. To keep the plant running, purchasing places over 50,000 orders per year for 20,000 different items.

noted in writing in the expediting folder. In accordance with Air Force policy, Mr. Kelly also makes a special effort to place orders with small business. Although he won't pay a price premium simply because a bidder has less than 500 employees (the semi-official definition of small business), Mr. Kelly has placed about 40% of his orders with small business.

When the Kingston operation first started, Mr. Kelly was faced with a really unique problem. He had to find sources for some highly specialized jobs that no one had ever tackled before. Sometimes this meant "selling in reverse." Purchasing had to convince the supplier that he could handle the job. Because of a lot of hard work, purchasing has now lined up a satisfactory source for every item. In fact now that vendors have acquired experience, Mr. Kelly happily reports increasingly keen competition.

Although they operate on a much smaller scale, the other IBM purchasing departments, in general, follow the same policies and procedures as the big departments in Kingston, Poughkeepsie, and Endicott. IBM has developed a number of innovations in purchasing. It has also incorporated old time tested purchasing principles in interesting —and sometimes new—ways. Because of their special interest, the balance of this article will deal with specific IBM purchasing practices and procedures.

Selective Follow-up Gets Results

THE PURCHASING AGENT of a well known farm equipment manufacturer visited IBM's Endicott plant several years ago. Purchasing Agent D. H. Covert explained his expediting procedure. The visitor was so impressed with it that he adapted it for use in his own department. Later, he told Mr. Covert that the system permitted him to do a better job with but half the personnel formerly required.

So it's not surprising that Mr. Covert is very proud of the expediting set-up in his department. He has good reason to be. The system provides excellent control over critical items that could tie up production if they were late. Its unique feature, however, is that it permits *variable control.* Some items need very close follow-up; others need considerably less attention. With IBM's system, each item gets the attention it needs—no more, no less. There's no wasted overhead on over zealous follow-up on parts where slow deliveries won't hamper production. Nor is there down-time in the shop because of lack of expediting on critical items.

500 Orders/Person

At Endicott, expediting is done in a separate section within the purchasing department. Four clerks and three expediters follow about 3500 orders per month. This would be an impossible task if each order were treated as if it were highly critical and given extremely close follow-up. Actually orders are classified into three categories by buyers. Those that are for services and readily available materials are coded "X." They receive no follow-up. Those that need some follow-up (but are by no means critical) are coded "H." These orders are followed for return of acknowledgment copy and also checked a week after delivery is promised. Those that should receive regular follow-up have no letter code typed in after the order number on the purchase order form. Orders in this category are followed first for the return of an acknowledgment copy. Then, they're checked a month prior to the scheduled shipping date to make sure the vendor has had no problems and to recheck the schedule. Finally, a check is made a week before shipping. If there is trouble at this point, the order is naturally followed closely on a daily basis until delivery is actually made.

Separate follow-up folders are made up for every order. They're kept in tub files and are broken down by commodity group numbers and then by vendor and purchase order numbers. It's easy to spot orders that should be followed by the color of the tabs and location.



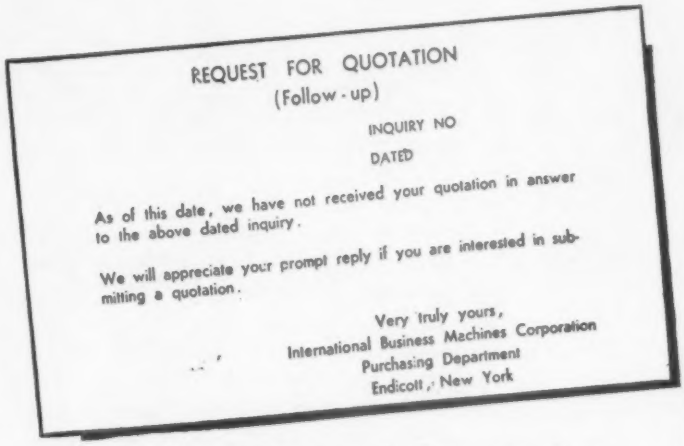
Eliminating Wasted Effort

IBM's technique of classifying orders into three categories isn't the only one that makes its expediting system efficient. Paperwork and procedures make for a minimum of lost motion. The tracing copy of each order goes into a separate folder. Small colored metal tabs are put on the folders. There is a separate tab for each scheduled follow-up. The color of each tab indicates the month in which the check should be made (e.g. an orange tab indicates follow-up in December). The position of the tab on the folder indicates the day of the month in which follow-up should be made.

After each folder is made up, it goes into a tub file. Files are broken down by commodity group numbers and then by vendor and purchase order numbers. It's easy to spot the orders that should be followed (as long as the clerk isn't color blind!) by the color of the tab and its position.

The first follow-up (and often succeeding checks depending upon how "hot" the item is) is made with the special follow-up form which

"At IBM perhaps 99% of all orders can be followed without bothering the buyer at all."



REQUEST FOR QUOTATION
(Follow-up)

INQUIRY NO

DATED

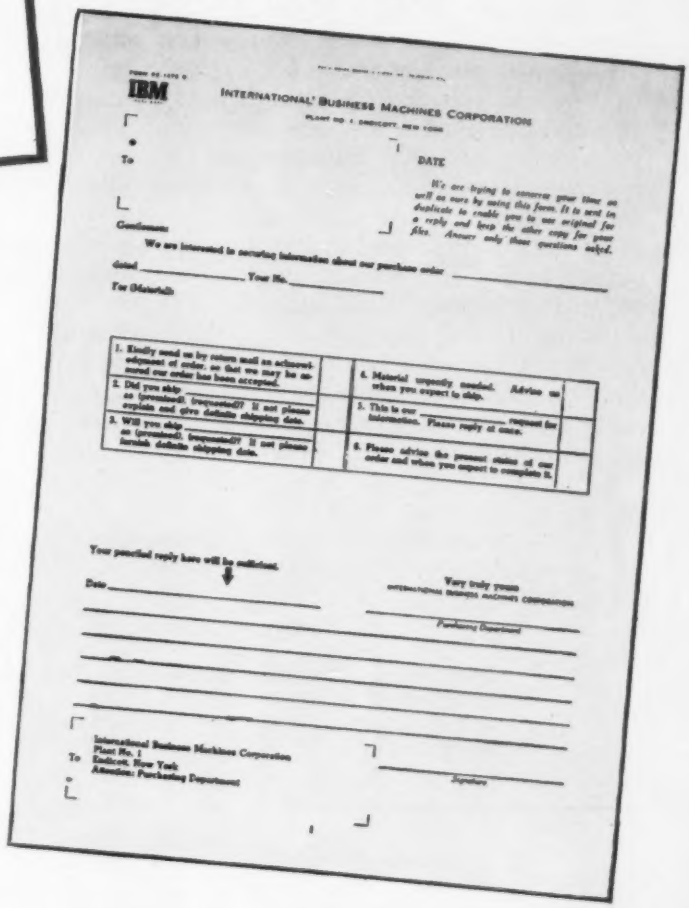
As of this date, we have not received your quotation in answer to the above dated inquiry.

We will appreciate your prompt reply if you are interested in submitting a quotation.

Very truly yours,
International Business Machines Corporation
Purchasing Department
Endicott, New York

The clerical group sends this postcard to vendors for follow-up on requests for quotation that haven't been acknowledged.

A 2-part snap-out form is used for routine follow-up for delivery. Six basic questions about delivery are pre-printed to cut IBM's typing load. It's easy for the vendor to enter his penciled reply on the form and then return it. Telegraph and telephone are, of course, used for "hot" jobs that are overdue.



IBM INTERNATIONAL BUSINESS MACHINES CORPORATION

To

DATE

We are trying to conserve your time as well as ours by using this form. It is sent in duplicate to enable you to use original for a reply and keep the other copy for your files. Answer only those questions asked.

Gentlemen:

We are interested in securing information about our purchase order

dated _____ Your No. _____

Re (Material):

1. Kindly send us by return mail an acknowledgment of order, so that we may be assured our order has been accepted.
2. Did you ship as (promised), (requested)? If not please explain and give definite shipping date.
3. Will you ship as (promised), (requested)? If not please furnish definite shipping date.
4. Material urgently needed. Advise us when you expect to ship.
5. This is our _____ request for information. Please reply at once.
6. Please advise the present status of our order and when you expect to complete it.

Your penciled reply here will be sufficient.

Date _____

Very truly yours
INTERNATIONAL BUSINESS MACHINES CORPORATION

_____
Purchasing Department

To International Business Machines Corporation
Plant No. 1
Endicott, New York
Attention: Purchasing Department

_____
Signature

is illustrated in this article. The form cuts typing time for IBM. It also saves the vendor time since he can reply to the request by simply writing in his answer on the form and mailing it back to IBM. Naturally, if there is trouble and shortages develop, expediters use telephone and telegraph for follow-up.

When the colored tab is removed from the folder, it indicates that the scheduled follow-up has been successfully made. Only exception to this is the third tab for parts scheduled for the regular, close follow-up. After the check is made a week before delivery, this tab is moved for a follow-up a week after scheduled delivery. When purchasing gets the receiving report, it removes the last tab and closes the file.

Buyers Free to Buy

At IBM, perhaps 99% of all orders can be followed by the expediter without bothering the buyer at all. The buyer is thus freed from a lot of unnecessary detail work. However, he is still the man who is basically responsible for delivery. If there's trouble, it's up to him to work his way out. Really "hot" items are listed on a shortage report which production control puts out daily. Naturally the expediters spend a lot of their time on the items listed on this report. Sometimes buyers must work on them too—particularly if the vendor is having special problems that are hurting delivery. Occasionally, of course, the buyer will go to the vendor's plant to investigate the problem personally. These are the exceptions rather than the rule. IBM's expediters can cope with most delivery problems. The training they receive is ideal to make them future buyers.

IBM's Endicott plant was taken here as an example of the company's expediting system. Actually procedures are similar (and often identical) at Kingston and Poughkeepsie. Organization is a little different, however. At Poughkeepsie, the expediter works with the buyer and assistant buyer as a member of a three man team. Expediting isn't a centralized function like Endicott. The organization at Kingston is patterned after Poughkeepsie. Both Mr. O'Hehir at Poughkeepsie and Mr. Covert at Endicott swear by their respective organizational set-ups for expediting. Both set-ups work well. Also, IBM organization policy permits flexibility. So probably neither will change in the foreseeable future.

PURCHASE ANALYSIS
More Than Pays Its Way

COST REDUCTION through value buying is not a new idea at IBM. Company purchasing people take justifiable pride in the fact that cost reduction has always been an important purchasing effort and objective. Formal value analysis first started at IBM as a joint project of purchasing and methods engineering.

Data was supplied to methods engineering on commodities that were very important dollar-wise. This cooperative effort between the two departments continued for several years and substantial savings were achieved. In fact, the program was so successful that top management agreed to the formation of a purchase analysis group in February, 1953.

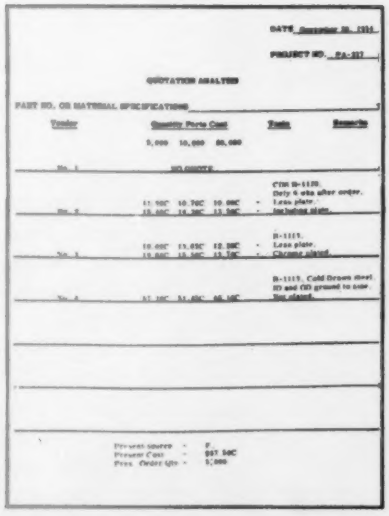
Before starting the program, IBM purchasing executives visited other companies and studied their programs. Actually, however, IBM's purchase analysis activity is not identical to that of any other company. IBM combined its own ideas with the best features of a number of systems to produce a program ideally fitted to the company's needs.

Purchase analysis is organized and operated in basically the same way at Endicott and Poughkeepsie. The unit at Kingston is expected to follow the same pattern. Everything is oriented to the fundamental aim of the program—to integrate manufacturing know-how and procurement skill for the purpose of lowering costs. How well the job has been done is shown by the fact that Endicott and Poughkeepsie reduced purchased costs by about 6% through purchase analysis.

In each plant, the purchase analysis group is headed by a man with an engineering and/or production background. W. T. Stevens, a graduate mechanical engineer who has had a wide variety of engineering experience in the company, is in charge of Endicott's purchase analysis.

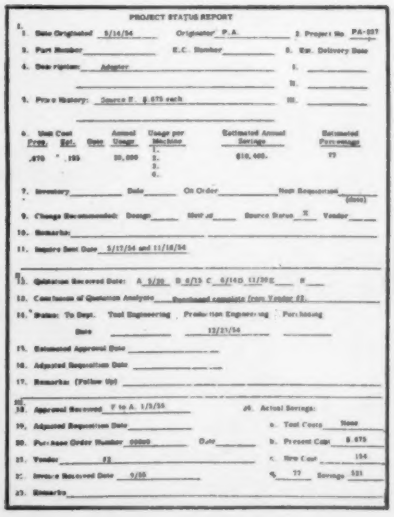
Savings Accrue With Good Follow Through

IBM assigns a number to each purchase analysis project and then follows through until actual savings are made. A typical project is #PA-237 which resulted in a saving of $10,400 through source and vendor change under the make or buy formula. Here are some of the steps involved in this project:



QUOTATION ANALYSIS

1. Four potential vendors quote and a Quotation Analysis form is made up for review.



PROJECT STATUS REPORT

2. Project Status Reports are made up periodically to show what progress is being made.



PURCHASE ANALYSIS DIVISION
PURCHASING DEPARTMENT
PLANT #3

COMPLETED PROJECT REPORT AND RECOMMENDATION

3. When all quotations and other data have been analyzed, a Completed Project Report and Recommendation is made.

His immediate staff consists of a former buyer, whose sole responsibility now is analysis, and a clerk.

Directing the activity at Poughkeepsie is J. H. McManus, a former superintendent of the company's plant there, with years of manufacturing experience at IBM and other companies. He is assisted by a tool engineer, who also has production engineering experience, and a business administration graduate who has completed IBM's manufacturing training program. At both Endicott and Poughkeepsie, the purchase analysis group is part of the purchasing department.

Purchase analysis is in a pivotal position regarding cost reduction through better buying. It works closely with manufacturing engineering, design engineering, or the buyers on specific projects, or with any two or all three at one time. It provides the buyers with sound technical assistance. In addition, each group works closely with its counterpart at the other plant, exchanging information and ideas both in reports and through personal meetings.

Purchase Analysis Helps Everybody

The continual rise in the dollar volume of savings effected through purchase analysis is evidence that it has not only "arrived" but is growing in stature rapidly. Its success is, of course, based primarily on its acceptance by all concerned. Fortunately, it is looked on by buyers, engineers, and production people as something designed to help them, not take away any of their prerogatives. They are asking for help, and getting it, to the advantage of themselves and the company.

Purchase analysis follows no rigid routine in the development of cost-saving ideas. Suggestions may come from any of the cooperating departments and, if they show merit, get the same close attention to those worked up within the group. The bulk of the analysis is done, however, as a direct activity of the group itself.

The technique is to study all parts and components that show cost cutting possibilities. These are generally the parts with the highest usage or the highest cost. Price increases on such parts invariably inspire a project. Specialized parts with high cost are particular targets, since there is considerable leeway in finding new vendors and lower cost producers for them. All inquiries from engineering as to sources for parts pass through the group and thus often provide leads when one of the analysts notices that a part cannot be made in a certain way.

Before this, however, he will accumulate all the information he can about the part from IBM records, including the price history. He may call on tool engineering for cost and availability of tools; on inspection for experience with the vendor; on production engineering for design changes in prospect, or for an opinion on relieving close tolerances; with production on usage; or on product cost estimating for an IBM cost on the item being studied.

He is then ready to ask for quotations from present or possible vendors, or to request a meeting with the vendor to analyze the situation.

Vendor Cooperation Needed

All the usual points are covered while an analyst is going after a cost reduction—new materials, new processes and methods of manufacture, standardization, better packaging, etc. Often a visit to a vendor's plant will reveal opportunities for cost reduction that were not visible without a physical inspection of his facilities.

IBM analysts write vendors explaining that they would like to come out to the plant to discuss reducing costs by eliminating certain parts or operations. They will find that it is often IBM designs and demands that were forcing the supplier to perform a number of unnecessary operations. When that occurs they will go back to their engineers and say, "here's what's costing money. Can we change it?" Many times a money-saving solution can be worked out that will be satisfactory to all concerned.

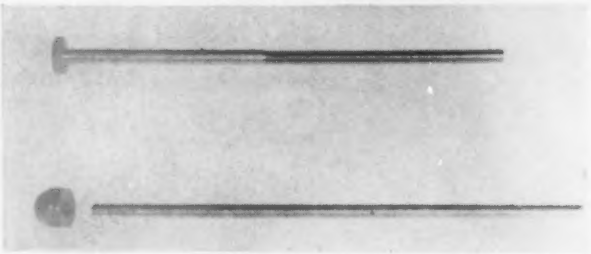
On the other hand, it has been found that some parts are simply in the wrong plants. So an important part of the program has been "putting the right kind of product in the right company."

PURCHASE ANALYSIS DIVISION
PURCHASING DEPARTMENT
PLANT #2
COMPLETED PROJECT REPORT
August 1956

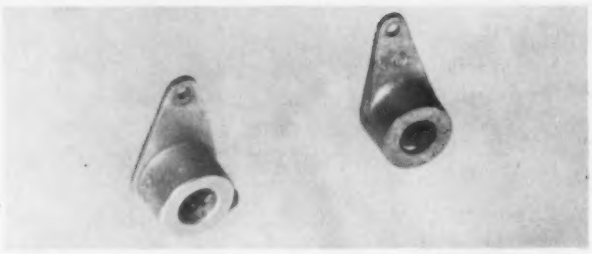
Project Number	Description	Annual Savings	Cost of Project
PA-6	Tube - Method and source change	$2040.	$197.50
PA-100	Sprocket - Design and vendor change.	5700.	None
PA-237	Adapter - Source and vendor change.	10680.	None
PA-250	Shaft - Change from manufactured to purchased complete.	26000.	None

4. Finally, Project #PA-237 appears on the Completed Project Report after deliveries of the lower-cost part have actually been made and approved by quality control and other interested departments.

PURCHASE ANALYSIS AT WORK



BAR STOCK TO THREADED ROD—This rectifier mounting screw was originally made on an automatic screw machine from hexagonal bar stock for $.204. Continuous threaded rod assembled with a cap nut cut the cost to $.049 each. Tool cost was eliminated.



BRAZED ASSEMBLY TO DIE CASTING—The original design of this ribbon control shaft lever assembly called for a sheet metal arm swedged and brazed to a screw machine hub. Unit cost was $.058. It was cut 65% by redesigning to a single die casting.



CASTING TO POWDERED METAL — This pressure roll release arm cost $1.056 as a machined casting. Re-design to permit use of powdered metal reduced the cost to $.199 each. Total cost of $1600 was more than offset by the 81% reduction in piece price.



FOUR PARTS TO ONE PART—Formerly, a pin bail drive arm consisted of three components assembled by staking and brazing at a total cost of $.311. Change to powdered metal permitted these parts and an eccentric that had been a separate part to be made as a single unit for $.204.

This has involved shifting parts from one plant to another, grouping similar parts and letting one supplier make them, and visiting present vendors' plants to help uncover much unused capacity that could be devoted to making other IBM parts. A special form, that must be filled out by any purchasing, engineering or production personnel visiting vendors' plants, has special provision for this type of information. Scanning these forms has provided purchase analysis with a number of profitable leads. As one analyst puts it, "we're always picking the vendors' brains, whether they're visiting us, or we're visiting them."

Management Kept Informed

Department heads and management are kept informed of purchase analysis progress by regular reports on the number of projects completed, savings effected, cost of completing projects, projects being currently analyzed and their potential savings, and the number of projects suspended. (Forms on which these reports are made are illustrated elsewhere.) Buyers are kept aware of projects affecting their commodities since a project number is entered on the purchase record card as soon as it is started. Before making a buy, the buyer can check with purchase analysis to see whether it would be more advantageous to hold up or go ahead.

Some projects take up to a year and a half before showing results, others begin to produce quickly. In either case, it is the responsibility of the purchase analysis group to see that some definite action has been taken on them, once all the necessary facts have been presented. At Endicott, for example, when a project is sent to engineering, they are given three months to take some action on it. If nothing is done within that time, purchase analysis follows up at intervals of a month until some answer is forthcoming.

When all arrangements are completed, it's then the buyer's job to confirm quotations and handle all purchase orders on the basis of the new set-up. A project is closed out and reported completed when samples are approved and the first production shipment is received and paid for at the new price.

Purchase analysis has brought about some notable savings (examples are given elsewhere) and played an important part in significant make or buy decisions (IBM's approach to this activity is covered in another part of this article). But as important as the dollar savings is the attitude it has helped maintain in IBM purchasing and other departments. It is the attitude best summed up by Mr. Covert when he said to his buyers, "you do not have to be critical or cast any reflection on past performance. But maintain an aggressive attitude toward cost reduction through buying and look to the future. Take advantage of technological advances in products, materials, and methods, and you cannot fail to find profitable applications in your requirements."

Imaginative Buying Methods

Getting the Right Answer to Make-or-Buy

BAD MAKE-OR-BUY decisions can be costly. Either existing plant facilities aren't utilized economically or the special talents of low cost vendors aren't taken advantage of. IBM has an especially knotty make-or-buy problem. Literally thousands of the parts it uses can either be made in the shop or bought from vendors.

To achieve its make-or-buy objectives, IBM has a special coordinator in each plant whose job is to reconcile the interests of the various departments concerned with make-or-buy. To measure the economic objective, the coordinator uses a simple formula to calculate the annual apparent savings by buying outside. Here's how the formula works: Vendor price and shop cost are compared for a year's usage of the part. The difference between vendor and shop tooling cost is figured. The combined difference is the "X" factor in the formula.

The "X" factor is compared with the "Y" factor which is the overhead that would be charged to the shop whether it made the part or not. When "X" is greater than "Y," it always pays to buy rather than make. When "Y" is greater than "X," it's economic to make. To see how the formula works study the examples below.

The formula, unfortunately, doesn't give all the answers. It might call for IBM to make a lot of items it now buys. Reason for this is the fact that the company doesn't have enough capacity. And additional capacity would, of course, affect the burden figures. This doesn't mean that the formula doesn't have many applications. Suppose for example, there are 100 parts all of which should be sourced "make" according to the formula. But there is plant capacity for only 50 of these parts. A considerable saving can be made by sourcing "buy" those parts which are relatively (though in this case, not absolutely) most economical to buy on the outside.

There are of course, a lot of non-economic factors that must be considered in make-or-buy decisions. IBM recognizes this. It takes account of such things as changing technology, lack of specially skilled personnel either in IBM or supplier plants, etc. The formula, despite its drawbacks, still provides a basis for rational consideration of all the factors that influence a make-or-buy decision. It's a great improvement over the not uncommon method of selecting "make" items on a random, helter-skelter basis to "fill the plant with work."

MAKE-OR-BUY ECONOMIC FORMULA EXAMPLES

Description	I. New Part: Buy	II. Existing Part: From Buy to Make	III. New Part: Make	IV. Existing Part: From Make to Buy
DATA:				
A - Annual Usage	300	1,000	1,000	1,000
B - Additional Tool Cost, In-Plant	$1,000	$1,000	$50	None. Existing Tool Value is not additional Tool Cost.
C - Additional Tool Cost, Purchase	None	None	$1,000	None
D - Unit Cost, In-Plant	$.50	$.50	$2.00	$2.00
E - Unit Cost, Purchase	$1.50	$1.50	$.75	$.75
F - Unit Burden Cost, In-Plant	$.35	$.35	$1.20	$1.20
CALCULATIONS:				
X - Annual Apparent Savings by Purchasing A (D-E) plus $\frac{B-c}{2}$	$200	$-500	$775	$1,250
Y - Annual Burden Absorbed In-Plant A times F	$105	$350	$1,200	$1,200
RESULTS:	X greater than Y: Buy	X less than Y: Make	X less than Y: Make	X greater than Y Buy



E. P. Q. can't give all the answers; a personal review of the stock situation is still a good practice. Here, W. A. Kipp (right), manager of buying in Endicott general purchasing, talks to E. J. Couroy of the Parts Distribution Center.

The Right Quantity Costs Least

BUYING the economic quantity keeps down the cost of both purchasing and stocking. IBM knows this and has done something about it. It has developed a technique which it calls E. P. Q. or Economic Purchasing Quantity. It stresses E. P. Q. as a tool not as an arbitrary judge of the one right quantity to buy.

IBM's E. P. Q. system considers these variables: monthly usage, quantity discounts, inventory carrying costs, deliveries, and receiving cost. Normally, for items of greater than $100 monthly requirement value, an Economic Purchasing Quantity analysis sheet (Figure 1) is prepared. For items when usage is less than $100 per month, a quick reference chart is used.

The E. P. Q. analysis work sheet is prepared by an E. P. Q. clerk. He bases his calculations on information taken from the purchase requisition and the vendor's quotation. After the form is completed, it is sent to a master file and held pending re-use.

In preparing the purchase order the buyer is not bound to the quantity indicated by the work sheet. He may also consider possible obsolescence, deterioration, engineering changes, etc. In IBM's case, engineering changes are probably the most important consideration.

Preparing the Work Sheet

In the example shown in Figure 1, data from the requisition and vendor's quotation, supplied the E. P. Q. clerk by the buyer, has been entered on the work sheet. A metal box, part number 221753, has a monthly usage of 300 units. From the quotation comes price information, including quantity discounts, and a delivery schedule indicated by the vendor. The only calculation at this point is multiplying the monthly usage by 12 to get annual usage.

For each purchase to be made, a clerk fills in, on the line marked Quantity, the various price breaks and the number of months that each price break covers. The unit price is inserted and the annual parts cost determined by multiplying the annual usage by the unit price.

IBM estimates that its cost of carrying inventory is 24%. Figure 2 shows how the monthly inventory, of the example, fluctuates and how the average inventory dollar is determined. Parts are purchased covering an eight month period. Two shipments are received during the first three months. Then, at the termination of the eight month period, a second cycle begins with another two shipments in a three month period.

In the example, the average monthly inventory during the full 12 month period is 1000 units. This, multiplied by $.60 (unit price) shows the average inventory dollar value as $600. 24% of this comes to $144—the carrying cost.

IBM has also calculated that each incoming shipment costs the firm $4.20. Thus, the receiving cost is figured on the basis of the average number of deliveries per year multiplied by $4.20. Note that deliveries, rather than the number of purchase orders issued, are used.

In the example, Figure 2, it appears that the number of deliveries is four. However, if the chart is extended for another 12 months, only two more deliveries would appear. Thus, the average number of deliveries during a 12 month period is three. Through simple multiplication, the receiving cost becomes $12.60—rounded on the work sheet to $13.

Total Annual Cost

After working out and recording this information, it is simple to add up annual parts cost, carrying cost, and receiving cost to get the total annual cost. From this, it is easy to see the most economic procurement quantity.

One other piece of information appears on the work sheet. This is the best number of deliveries for specific periods of time. While the E. P. Q. is calculated on the basis of maximum deliveries (recommended by the vendor), a special IBM chart is used to determine the best delivery schedule for the number of months covered by each purchase order.

This information is contained on the work sheet for the buyer's attention, and possibly for future negotiations. It is not used in any of the calculations.

The most economic procurement quantity in the example is the 2400 units in an eight month period. However, while the calculations are done on the basis of two deliveries in a three month period, the best delivery schedule would call for six deliveries during the eight month period.

At the bottom of the work sheet is an area for remarks. Here the buyer writes down his reason if he rejects the indicated E. P. Q. Naturally, it is at this point that obsolescence, engineering changes, etc., enter the picture.

IBM purchasing executives are pleased with the results of their E. P. Q. system. Though it's hard to calculate savings precisely, they're confident that they exceed the additional clerical work required by a wide margin.

ECONOMIC PROCUREMENT QUANTITY ANALYSIS

Part Number 221753 Part Name Box

Vendor John Doe Metal Products Co. Inquiry Number Their letter 11/8/55

Usage: Monthly 300 Units

Annual 3600 Units

	1	2	4	8	12	
Quantity (PO)	300	600	1200	2400	3600	
Unit Price	.72	.65	.62	.60	.595	
Deliveries: Maximum	1	1	1	2 in 3 mos.	3 in 3 mos.	
Best Number	1	1	2 in 4 mos.	4 in 8 mos.	6 in 12 mos.	
Annual Parts Cost	2592	2340	2232	2160	2142	
Carrying Cost	26	47	89	144	215	
Receiving Cost	50	25	13	13	13	
Total Annual Cost	2668	2412	2334	2317	2370	

*

Figure 1

Figure 2

PART # 221753 — 2400 units – 8 mos.
Unit Price – .60 — Delivery – 2 in 3 mos.

	Delivery	Usage	Inventory at start of mo.	Inventory at end of mo.	Average Inventory
JAN.	1200	300	1200	900	1050
FEB.	-	300	900	600	750
MAR.	1200	300	1800	1500	1650
APR.	-	300	1500	1200	1350
MAY	-	300	1200	900	1050
JUNE	-	300	900	600	750
JULY	-	300	600	300	450
AUG.	-	300	300	0	150
SEPT.	1200	300	1200	900	1050
OCT.	-	300	900	600	750
NOV.	1200	300	1800	1500	1650
DEC.	-	300	1500	1200	1350
TOTAL	4800	3600	12/12000	=	1000
CARRYING COST	1000 x .60 x .24	=			144



There's no substitute for direct personal contact with suppliers. Here, Poughkeepsie Buyer E. A. Hampe discusses a plastic part with Robert Whalen of Briehart Plastics Corp. of Mineola, N. Y.

Good Buyers Know Their Suppliers

IBM normally bases its buying decisions on competitive quotations. But IBM buyers do a lot more than just place business with the low bidder. They don't select vendors in a hit-or-miss fashion by any means.

Suppliers probably don't realize how thoroughly they were investigated before they got their first IBM order. If a proposed vendor isn't nationally known, the buyer gets a Dun & Bradstreet credit report on him. Frequently, he supplements this with expert advice from the company's financial analysis department. Besides finding out if a supplier is financially sound, buyers want to know how much IBM business he could finance without undue strain. Also, of course, they do not want any one vendor to become too dependent upon IBM business. This policy helps the vendor. Few suppliers will refuse business if a buyer asks them to help him out and some of them are inclined to "bite off more than they can chew."

If financial analysis shows a vendor is sound financially and that he has always been ethical in his business dealings, the buyer will ask permission to visit his plant. If the buyer is considering placing an important order with a proposed supplier, he will get expert help for this job. Frequently, the buyer's boss and/or experts from quality control or engineering will accompany him on the plant visit. A special report is made up which describes the facilities, equipment, and methods that were observed. It is kept on file for reference; copies are sent to other IBM plants who might be interested in contacting the same vendor.

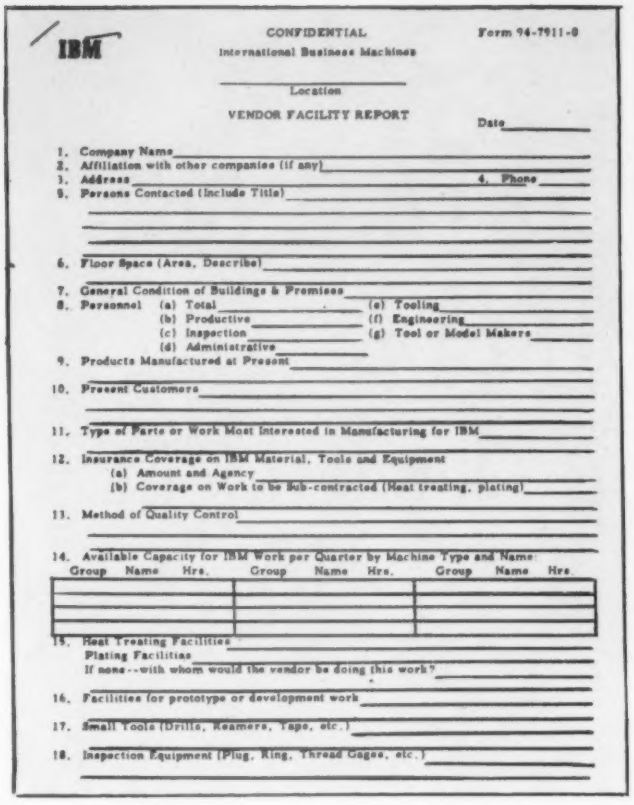
Plant Visits Frequent

If the vendor's financial condition, plant and equipment, and manufacturing methods are satisfactory, he will get the order—provided his price is competitive. But even if no real quality or delivery problems develop, the buyer doesn't go to sleep after he places the order. He periodically reviews vendor rating reports on the supplier (which are described in detail in another section of this article).

If the vendor is a fairly important one, some one from IBM will visit his plant as often as once a month. These visits aren't attempts by IBM to tell a vendor how he should run his own business. Instead they're designed to cement vendor relations through friendly calls to see if there are any problems in which IBM can be of assistance. Also, they are a valuable training device for new buyers and expediters.

Negotiating Lower Prices

IBM almost always places fixed quantity orders for delivery in one or more lots. When parts come up for re-order, price negotiations aren't infrequent. If labor or material costs have gone up, vendors sometimes ask for higher prices. If qualified competitors are holding the price line,



IBM

CONFIDENTIAL
International Business Machines

Form 94-7911-0

Location

VENDOR FACILITY REPORT

Date

1. Company Name
2. Affiliation with other companies (if any)
3. Address
4. Phone
5. Persons Contacted (Include Title)
6. Floor Space (Area, Describe)
7. General Condition of Buildings & Premises
8. Personnel (a) Total (e) Tooling
(b) Productive (f) Engineering
(c) Inspection (g) Tool or Model Makers
(d) Administrative
9. Products Manufactured at Present
10. Present Customers
11. Type of Parts or Work Most Interested in Manufacturing for IBM
12. Insurance Coverage on IBM Material, Tools and Equipment
(a) Amount and Agency
(b) Coverage on Work to be Sub-contracted (Heat treating, plating)
13. Method of Quality Control
14. Available Capacity for IBM Work per Quarter by Machine Type and Name

Group	Name	Hrs.	Group	Name	Hrs.	Group	Name	Hrs.

15. Heat Treating Facilities
Plating Facilities
If none--with whom would the vendor be doing this work?
16. Facilities for prototype or development work
17. Small Tools (Drills, Reamers, Taps, etc.)
18. Inspection Equipment (Plug, Ring, Thread Gages, etc.)

This Vendor Facility Report is filled out after a potential supplier's plant is visited by an IBM buyer. The reports are filed and other IBM plants can get copies so they can contact the supplier if they have a job which he can handle.

a vendor who insists on a big increase will likely lose the business. But such cases are rare; most requests for price increase are legitimate.

Since buyers want to be completely fair, they often ask vendors for substantiation of price increases. This can be a simple analysis of the weight of the part and cost increase per pound if the reason is higher raw material costs. Or it may be a detailed cost breakdown. In either case, the buyer can readily check the validity of the proposed increase. Competitive quotations on file and detailed cost estimates by IBM Manufacturing engineering supplement the buyer's knowledge of values.

According to W. M. Paradise, who heads general purchasing at Poughkeepsie, "requests for price increases often lead the vendor and IBM to changes that cut costs." This often happens with engineering changes. When they occur, the buyer sends revised prints to the vendor and requests new quotations. The quote is compared with IBM's own estimate of the cost of the change. Often the buyer and the vendor succeed in working out minor alterations that cut the cost of the engineering change—or, occasionally, result in a net price decrease. In fact, vendors are always encouraged to submit modifications in design or tooling that will either cut cost or improve quality.

IBM buyers never ask a vendor for a price reduction simply because they would like to pay less for a part. But they're very alert to legitimate opportunities for cost reduction. They follow raw material markets to take advantage of any price declines that will affect suppliers' costs on future buys. They're alert to cost-reducing increases in volume. They're familiar with the learning curve principle that costs decline with experience.

Handling Engineering Changes

Because a lot of IBM products use complex precision components, buyers have some special problems. One of them is the large number of engineering changes on new products. Buyers solve this problem by keeping changes away from vendors until they get going. Then they incorporate them in a block. This slows output, but only temporarily. Suppliers like this method too. With steady production, their unit costs are lower and they can turn over their investment in inventory more rapidly.

Whenever production volume and tooling costs permit, IBM has two or more sources for each item. It's good protection. However thorough and scientific their practices are for most problems, IBM buyers (like those in other companies) are pretty helpless when a strike stops production of a single-source item.

Actually it's rare when IBM buyers have to work their way out of difficulties occasioned by poor quality, late delivery, or strikes. With sound buying practices, it's possible to weed out the potentially bad suppliers before placing orders.

PLANNED TRAINING BUILDS A Strong Department

IN 1950, IBM's sales were $214 million; in 1955, they were $563 million. IBM top management has every intention of maintaining this rate of growth with new products and wider uses for existing products. As a result IBM purchasing executives must give special attention to an important phase of their jobs—buyer development and training. Just to "stay even," purchasing will need more qualified personnel in the next four years.

Buyer development isn't something new at IBM. In fact, it's almost not an exaggeration to say that rapid promotions in purchasing have been the rule rather than the exception. For example, most of the assistant buyers in the electronic data processing machine group in Poughkeepsie were expediters only a year ago. This example bears out Purchasing Vice President Lewis's statement that one of purchasing's big problems "has been finding people qualified to step into bigger jobs."

An Overall Problem

Because of rapid expansion, this problem isn't confined strictly to purchasing. It's company-wide. IBM has attacked it in several ways. It probably has the most elaborate employee education program of any business in the country. Courses are taught at each major plant. Curriculum varies from electronic circuit design to effective speaking. Any ambitious IBM employee can get the equivalent of an engineering degree part-time if he is perseverant. In fact, the company has some courses that would be interesting and challenging to a PhD.

Purchasing people take advantage of this opportunity for more education at IBM expense. For example, B.A. Easton, who heads typewriter purchasing, reports that every buyer in his department is taking at least one course this year. Electrical courses help buyers understand the concepts behind the design of the parts they buy. Business administration courses can be applied to day-to-day Purchasing problems.

Purchasing goes beyond the regular IBM education program. Recently, it organized a special course in purchasing policies and practices. Text was the company purchasing policy manual. Subjects discussed in twelve two-hour sessions included cost reduction, legal aspects of purchasing, vendor relations, purchasing policies, and relations with other departments, etc.

Training On-the-Job

Thus, IBM doesn't neglect the formal training of its purchasing personnel. It also is very conscious of the value of informal on-the-job training. This is very important with new personnel who sometimes aren't familiar with either IBM or purchasing in general when they're first hired.

Techniques for training new men vary somewhat from plant to plant. Mr. Covert at Endicott, for example, is a great believer in job rotation as a training tool. With his method, buying efficiency isn't sacrificed for training and personnel. He doesn't rotate buyers; he rotates parts. That is, a man buying four or five major commodities may lose one of them and gain a new one in the rotation. Eventually, every buyer becomes reasonably familiar with all important commodities.

Although no one ever stops learning, Mr. Covert's technique of rotating commodities benefits seasoned hands as well as newcomers. New



Classrooms are an integral part of the general offices of each major IBM plant and they're well used. Courses are offered in a wide range of subjects—both technical and non-technical. There are a number that are of interest to purchasing personnel and they take advantage of them. For example, in the Typewriter Division, every buyer is taking at least one course.

men are rarely if ever hired as buyers at IBM; they start as expediters and assistant buyers and work their way up. Mr. Covert has another gimmick which is particularly helpful to an ambitious and able newcomer to purchasing. It is the "roving" assistant buyer. This buyer works with any buyer in the department that needs help. In a year or two, he can get pretty familiar with every commodity the department buys. This method also is invaluable for helping out buyers who are temporarily overloaded but don't need an additional assistant permanently.

Getting the Right Man

Like Mr. Covert, Mr. O'Hehir in Poughkeepsie carefully reviews the performance of each man in his department and conscientiously tries to put the right man in the right job. Mr. O'Hehir, however, has a few techniques of his own for developing buyers. As was previously brought out in another section of this article, expediters at Poughkeepsie work very closely with buyers and assistant buyers. New men normally enter the department as expediters. Each is a member of a three-man buying team along with the buyer and the assistant buyer. Such close contact with buying problems permits able and ambitious expediters to develop rapidly. Promotions to assistant buyer and from there to buyer occur regularly. Buyers are prone to let expediters and assistant buyers work with them on important assignments so they can get the "feel" of the more important job before they're ever faced with its responsibility.

Ideas as to what are the most important general qualifications for a buyer vary from PA to PA. However every IBM purchasing executive agrees that a buyer should be "a good businessman" and should be able to meet and talk with others easily. Although they don't deny that an engineering background is helpful (and in fact very important in some buying jobs) they think a buyer should be primarily a good coordinator and a "student of economics." Actually the backgrounds of IBM buyers vary widely. But they've apparently adapted them to the needs of purchasing. Turnover in purchasing is very low and morale seems very high. Here's what one buyer said: "My job gives me more lift than any other job I've ever had."

Keeping Morale High

IBM purchasing chiefs don't neglect one important facet of good employee relations. When an employee wins a promotion, it is usually announced on bulletin boards throughout the plant and in the employee newspaper. This builds morale.

Though they're naturally extremely busy on their jobs (naturally buyer development is only one facet), IBM purchasing executives find plenty of time to devote to various community and charitable activities. This indicates that their own morale must be high.

Despite the distance (IBM's major plants aren't too conveniently located in this respect), IBM PAs are also quite active in the National Association of Purchasing Agents. Mr. Covert, for example, has served both as president and national director of the Syracuse Association.

Teamwork Improves Vendor Performance

NO VENDOR likes to lose a job because of poor quality or slow delivery. It hurts both his pride and pocketbook. Yet no buyer can afford to accept sloppy work behind schedule. Sometimes vendors get into trouble because their own manufacturing or quality control techniques are inadequate. Sometimes the fault lies with their customer's inspection methods. Often, there is lack of understanding between vendor and customer as to precisely what quality level is desired. Blueprints sometimes don't give suppliers all the information needed to make parts exactly the way customers want them. They usually don't show the relative importance of various tolerances. Nor do they show the inspection procedures necessary for good quality control.

Top quality is a must for IBM. So is prompt delivery if costly downtime in a shop is to be avoided. The company also believes good vendor relations are essential to its long range prosperity. It achieves all three objectives with its very thorough vendor quality program. The program includes vendor certification, vendor rating, and close cooperation between purchasing and quality control. Results have been terrific. Quality has been boosted; inspection costs have been cut.

Vendor Certification

IBM gets a lot of shipments of precision parts that aren't checked at all by receiving inspection. This doesn't mean the company has no standards of quality. Such shipments are made under vendor certification agreements, so they don't have to be checked completely by IBM receiving inspection. With vendor certification, it's possible to get better quality and, at the same time, cut inspection costs. Before vendor certification, for example, one company had a 10-12% rejection rate. The rejections were expensive for the vendor: they also cost IBM money to inspect. The vendor revised his inspection procedures to meet the requirements of IBM's vendor certification. His rejections now average less than 1%. Both IBM and the vendor have benefitted as a result.

Vendor certification is just what the term implies. The vendor "certifies" that each shipment meets the desired quality level. IBM limits its inspection of certified shipments to periodic audits wherein a complete sample is thoroughly inspected. Interestingly enough, IBM isn't the only party that cuts inspection costs with certification. Vendors are often able to reduce the size of the sample they inspect. Good quality used to mean 100% inspection of every piece. Because no inspector is completely perfect (or can be for that matter!), it was proved that 100% inspection was actually only about 88% effective. Modern quality engineers have today proved with

A Good Example of Teamwork

IBM's new electronic computers and related equipment require large numbers of precision capacitors and resistors. Sprague Electric Company of North Adams, Mass. is an important supplier. Teamwork between IBM purchasing and quality control personnel and Sprague was essential to getting one of IBM's recent cost-cutting developments working. At its Kingston plant, the company had developed a machine that automatically assembled capacitors. The machine eliminated a lot of hand soldering. There's only one problem: tolerances on the capacitors must be rigidly adhered to or the machine will jam. IBM and Sprague worked together and solved it.

Like other IBM vendors, Sprague Electric gets periodic reports on its performance under IBM's vendor rating plan. Sprague isn't unique in that it is delighted to have its quality rated objectively with such a plan. According to Sprague Vice President N. W. Welch, "Sprague Electric Company is pleased to have assisted the International Business Machines Corporation which has taken the lead in specifying components of the highest reliability, calling for the utmost in manufacturing skill on the part of suppliers . . . . "

statistics that checking a scientifically selected sample can be more effective than 100% inspection. To qualify for vendor certification, the supplier must use up-to-date quality control techniques. So some suppliers who used to inspect 100% are now getting better quality by just checking a carefully selected 10 or 15% sample.

IBM doesn't certify every supplier with which it deals. It can't afford to if the vendor's quality control techniques aren't up-to-date. Before a supplier is qualified, purchasing arranges to have an IBM quality engineer visit his plant. Besides reviewing quality procedures, the engineer goes over IBM's quality control techniques, and outlines the quality level desired in the particular part. The first visit by the quality engineer isn't the last one. Periodic checks are made of certified suppliers to make sure quality control methods are kept efficient.

If anything, suppliers are probably more pleased with vendor certification than IBM. They gain something besides lower costs and better quality. Their chief inspectors can sometimes get useful ideas from the IBM quality engineers.



Checking IBM's new system for automatic assembly of capacitors are, left to right: H. R. Valenti, sales representative, Sprague Electric Co.; W. W. Clark, manager, quality engineering, Sprague Electric Co.; B. S. Hudela, IBM buyer; and E. H. Browne, IBM quality engineer.

Perhaps more important, however, is the boost certification gives the vendor's selling efforts on other customers. A PA will listen attentively to a salesman who can prove that "our quality is so good IBM accepts our shipments without inspecting them."

Rating Vendor Quality

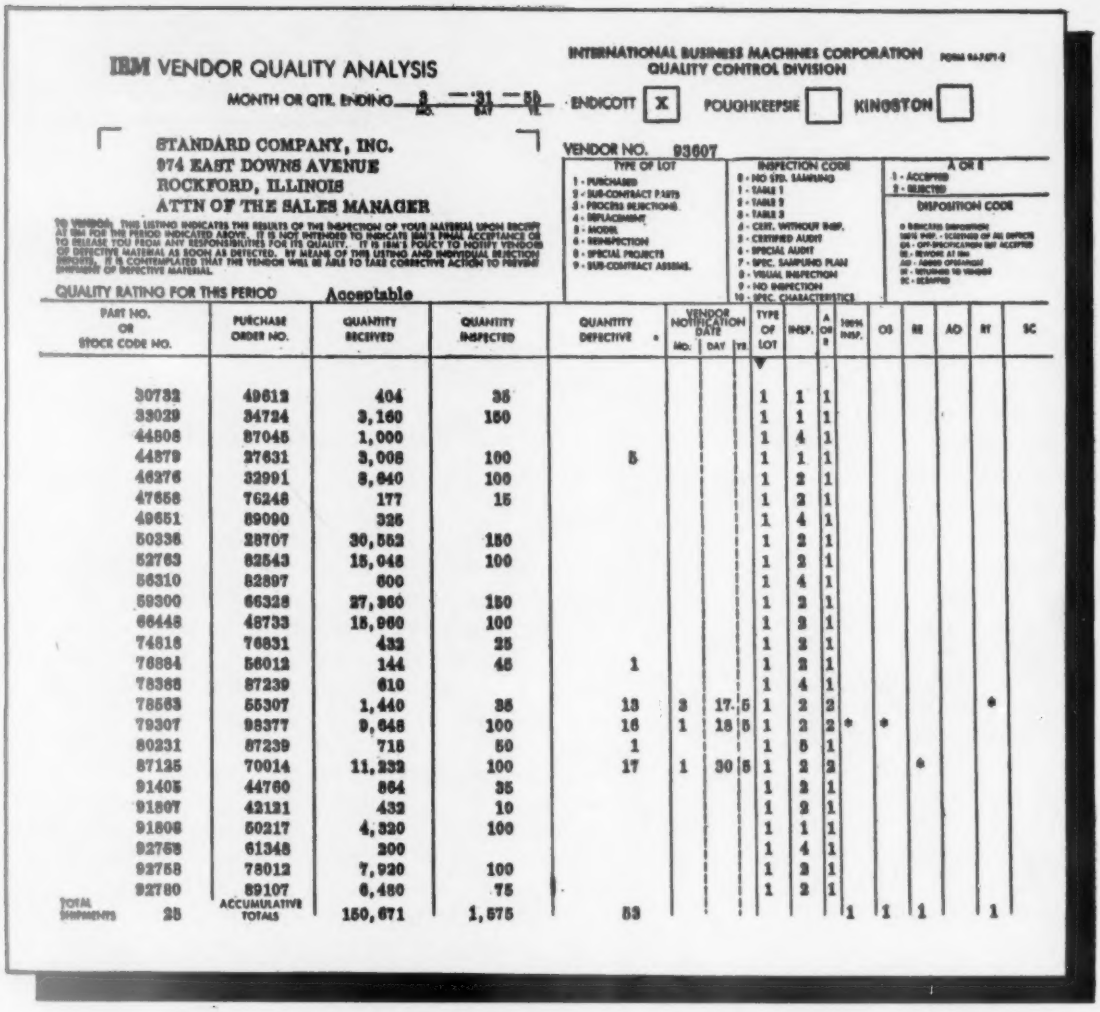
Naturally IBM certifies only those suppliers that have proved themselves quality sources with a past record of satisfactory shipments. At IBM, it isn't hard for a buyer to check a vendor's quality record. The company's vendor rating provides a precise, objective evaluation. Vendor quality is rated "excellent," "acceptable," and "undesirable." In addition, more precise numerical ratings are calculated. Monthly or quarterly both the vendor and the buyer get copies of Vendor Quality Analysis Report prepared by quality control. The report lists all shipments by the vendor and rejections and also gives the vendor's quality rating. The entire report, naturally, is a confidential matter between IBM and the vendor. It provides objective background material for any quality improvement discussions between the buyer and supplier.

Here's how the report is compiled: First, quality engineers must carefully check the function of each part. They then classify dimensions and other characteristics into four groups: critical, major, minor, and minor B. Each set of characteristics gets an "AQL" (Acceptable Quality Level) rating which is the percentage of defects permissible in a given lot. Critical tolerances need a much higher "AQL" than minor ones. The various classes of quality levels are averaged to give a complete "AQL" for the part.

Inspection reports are tabulated (by IBM machines naturally) and the percentage of rejections is calculated. This percentage is compared with the composite "AQL" percentage for the part, and the vendor rating is determined. The entire Vendor Quality Analysis Report is made up with IBM machines so the clerical work in making it up is considerably less than what might be expected.

Rating Vendor Delivery

A vendor that has good quality isn't necessarily a good one. He must also be able to deliver on schedule. IBM's vendor rating program recognizes this fact. Vendor delivery performance on each shipment is punched on an IBM card as



IBM VENDOR QUALITY ANALYSIS

INTERNATIONAL BUSINESS MACHINES CORPORATION
QUALITY CONTROL DIVISION

MONTH OR QTR. ENDING 8 —31— 56 (MO. DAY YR.) · ENDICOTT [X] POUGHKEEPSIE [ ] KINGSTON [ ]

STANDARD COMPANY, INC.
974 EAST DOWNS AVENUE
ROCKFORD, ILLINOIS
ATTN OF THE SALES MANAGER

VENDOR NO. 93607

TO VENDOR: THIS LISTING INDICATES THE RESULTS OF THE INSPECTION OF YOUR MATERIAL UPON RECEIPT AT IBM FOR THE PERIOD INDICATED ABOVE. IT IS NOT INTENDED TO INDICATE IBM'S FINAL ACCEPTANCE OR TO RELEASE YOU FROM ANY RESPONSIBILITIES FOR ITS QUALITY. IT IS IBM'S POLICY TO NOTIFY VENDOR OF DEFECTIVE MATERIAL AS SOON AS DETECTED. BY MEANS OF THIS LISTING AND INDIVIDUAL REJECTION ADVICES, IT IS CONTEMPLATED THAT THE VENDOR WILL BE ABLE TO TAKE CORRECTIVE ACTION TO PREVENT SHIPMENT OF DEFECTIVE MATERIAL.

TYPE OF LOT: 1 - PURCHASED; 2 - SUB-CONTRACT PARTS; 3 - PROCESS REJECTIONS; 4 - REPLACEMENT; 5 - MODEL; 6 - REINSPECTION; 8 - SPECIAL PROJECTS; 9 - SUB-CONTRACT ASSEMBLY.

INSPECTION CODE: 0 - NO STD. SAMPLING; 1 - TABLE 1; 2 - TABLE 2; 3 - TABLE 3; 4 - CERT. WITHOUT INSP.; 5 - CERTIFIED AUDIT; 6 - SPECIAL AUDIT; 7 - SPEC. SAMPLING PLAN; 8 - VISUAL INSPECTION; 9 - NO INSPECTION; 10 - SPEC. CHARACTERISTICS

A OR R: 1 - ACCEPTED; 2 - REJECTED

DISPOSITION CODE: 0 REJECTED DISPOSITION; 100% INSP. - SCREENED OF ALL DEFECTS; QA - OFF-SPECIFICATION BUT ACCEPTED; RE - REWORK AT IBM; AD - ADMIN OPTIMIZED; RT - RETURNED TO VENDOR; SC - SCRAPPED

QUALITY RATING FOR THIS PERIOD: Acceptable

PART NO. OR STOCK CODE NO.	PURCHASE ORDER NO.	QUANTITY RECEIVED	QUANTITY INSPECTED	QUANTITY DEFECTIVE	VENDOR NOTIFICATION DATE MO.	DAY	YR.	TYPE OF LOT	INSP.	A OR R	100% INSP.	OS	RE	AD	RT	SC
30732	49612	404	35					1	1	1						
33029	34724	3,160	150					1	1	1						
44808	37045	1,000						1	4	1						
44879	27631	3,008	100	5				1	1	1						
46276	32991	8,640	100					1	2	1						
47658	76248	177	15					1	2	1						
49651	89090	325						1	4	1						
50336	28707	30,552	150					1	2	1						
52763	82543	15,048	100					1	2	1						
56310	82897	600						1	4	1						
59300	66328	27,360	150					1	2	1						
66448	48733	15,960	100					1	2	1						
74818	76831	432	25					1	2	1						
76884	56012	144	45	1				1	2	1						
78388	87239	610						1	4	1						
78563	55307	1,440	35	13	3	17	5	1	2	2					*	
79307	98377	9,648	100	16	1	18	5	1	2	2	*	*				
80231	87239	718	50	1				1	5	1						
87125	70014	11,232	100	17	1	30	5	1	2	2			*			
91405	44760	864	35					1	2	1						
91807	42121	432	10					1	2	1						
91808	50217	4,320	100					1	1	1						
92768	61348	300						1	4	1						
92758	78012	7,920	100					1	2	1						
92780	89107	6,480	75					1	2	1						
TOTAL SHIPMENTS 25	ACCUMULATIVE TOTALS	150,671	1,575	53							1	1	1		1	

The Vendor Quality Analysis Report provides a complete history of commodities the vendor has shipped during the rating period. It contains identification of part, inspection data, disposition and vendor's rating classification.

a by-product of the company's system for passing invoices. There are four ratings: *ahead of schedule, on time, two to four weeks late,* and *over four weeks late.* An ideal vendor, of course, is neither behind nor ahead of schedule. It's easy to find the variance from "ideal"; IBM cards can be used to run off a complete tabulation of a vendor's performance over a period of months.

Entire Program Successful

IBM started its vendor rating program less than a year ago. So far its cost has been more than offset by its results; both quality and delivery have been improved. However, IBM purchasing isn't unique in that despite the best laid plans, buyers still have quality and delivery difficulties. Suppliers encounter unforeseen problems in their shops. Schedules change; engineers get new ideas. But, as Endicott plant PA D. H. Covert says, "it's very unusual if we have so much trouble that we want to stop doing business with a given supplier."

One good reason for Mr. Covert's statement may be that the vendor rating program is really just a statistical framework for something IBM has been doing for years. Buyers and expeditors have always worked closely with suppliers on delivery problems. If the supplier has a quality problem, the buyer will ask one of the IBM quality engineers to visit his plant. The engineer can investigate and help the supplier solve the quality problem. In short, IBM believes in giving suppliers all help that's within reason so that they'll be able to do a better job for IBM. Vendor rating and vendor certification can only come after a period of successful teamwork between purchasing, quality control and the vendor.

Imaginative Buying Methods

AUTOMATION

Comes to Purchasing

THE VERY NAME IBM may conjure up pictures of the utmost in office automation. The average purchasing agent, for example, may think, a little enviously, that all IBM has to do is apply some of its electronic equipment to the heavy burden of purchasing paperwork and a day's work will be done in seconds. A few buttons are pushed, wheels whir, lights flash, punched cards pour in and out, and the ordinarily tedious processing of requisitions and orders is done in a flash.

It's not quite as simple as that. IBM is too realistic to think that any machine or group of machines can be brought in overnight to replace a system that has grown up through years of experiment and adaptation. The approach to automating purchasing is a gradual one. The IBM theory is that you're better off to change a relatively complex and well-established system of purchasing administration piece by piece, rather than throwing the whole system out and trying to start from scratch.



"The Cardatype—a unit that combines a small computer with a 'slave' electric typewriter—probably comes closer to the average purchasing agent's idea of automatic order writing than systems involving complex, expensive equipment."

Several kinds of new IBM equipment are being used by purchasing, in addition to the regular company products, such as electric typewriters, that have been in use for a number of years. In at least two cases, equipment and methods are being "guinea-pigged" in different plant purchasing departments before being generally applied.

At Poughkeepsie, the daily computations of a big 702 Electronic Data Processing Machine indirectly affect purchasing operations by indicating changes in inventory status and the need for buying or expediting. The heart of the 702 is a group of accurate, up-dated perpetual inventory tapes. Almost 90 different categories of data for 35,000 parts or materials are recorded on these tapes. Included are name, number, protective stock in days, on order, in process, in stock, in float, and economic order quantity.

This perpetual inventory record is kept accurate and up-to-date automatically as every change in inventory is fed daily into the computer by means of routine transaction cards. These transaction cards are prepared when action is taken that will affect the inventory status of any part of material covered by the tapes—withdrawals, transfer of material from stock to process, new receipts, etc. As they are fed into the machine, they create new perpetual inventory tapes.

At the same time, the computer is doing, in a matter of seconds, the computations on stock levels, order points, receipts and withdrawals that might take an inventory clerk hours, to determine whether a buy—or expediting—is called for. This is indicated on a secondary tape, from which the information is transferred to punched cards. These cards are distributed to proper personnel for action.

Cards showing the need for expediting are passed to production control. Here they are checked against outstanding purchase orders to



The purchasing lobby at Poughkeepsie is more than just a place for salesmen to wait to see buyers. A 702 computer, in the background, is actually operating and is used for computing changes in inventory, etc.

determine where any slowdown in movement of parts or materials has occurred. If the vendor's failure to deliver is the reason, necessary information is passed to expediting for follow up.

Cards indicating the need for a buy are sent to planning. Here the factors of lead time, economic order quantity, inventory levels, etc. are checked and reviewed. If a decision to purchase is reached, a requisition is made out and sent to purchasing for action.

Automatic Order Writing?

This process is interesting, but its exciting aspect is the path it opens to automatic order writing. IBM's experiments have shown that by adjusting the type and amount of information fed into the machine, human rechecking of the computer's decisions on the need for purchasing and expediting could be eliminated. Thus, the secondary tape now generated could be run on an IBM printer to prepare purchase orders completely automatically. Purchase order numbers would be assigned by the computer. The only non-automatic step would be the visual checking of the printed information and the signing of the order by the purchasing agent.

Like all other departments, purchasing receives pertinent data developed when computers and high-speed tabulating equipment are used for over-all management of the company. When quarterly business information is processed, for accounting purposes, purchasing receives as a by-product an alphabetical listing of all suppliers with whom IBM has done business during a given quarter and the amounts paid to them in that quarter and in the year to date. A second sheet shows purchases by commodity. Kept in book form, these records provide buyers with a guide to where and how IBM business is being distributed.

The Cardatype—a unit that combines a small computer with a "slave" electric typewriter—probably comes closer to the average purchasing agent's idea of automatic order writing than systems involving complex, expensive equipment. After successful testing at Poughkeepsie, IBM has decided to use the Cardatype method of semi-automatic order writing at its Kingston plant.

The unit is particularly adaptable to the Kingston plant, which produces electric typewriters, since much of the buying there is repetitive. Engineering changes do not affect a large percentage of the parts bought for the typewriter. Most of the initial control cards used with the Cardatype thus do not require constant alterations due to design or engineering changes.

The Cardatype works from "decks" of punched cards, made up for each part. The first card shows the vendor's name, address, and code number. The second contains shipping terms of that vendor. The final card—or cards, in case more than one item is being bought from the same vendor—carries the buyer's code number, coded delivery point, part description, reference on engineering changes, and unit price.

The computing part of the Cardatype receives the punched cards, decodes them, and activates the attached electric typewriter, which automatically types out the required data on a purchase order form. Purchase order numbers and quantity ordered are manually typed in by an operator, when the machine automatically stops at the point where those data are to be inserted.

The Cardatype system requires a continuous purchase order form in which all copies are the same size. IBM has a redesigned purchase order form (its regular form has an outsize accounting copy), for use with the Cardatype.

Punched Card Requisitions

At Endicott, purchasing is now trying out the punched card requisition, which eventually may be tied in with either of the automatic systems described above. For a limited number of raw material items (aluminum, brass, copper, iron and steel), punched cards have been set up, each bearing the material code number.

As needs arise, production fills in the card with quantity required, job number, delivery point, etc. and sends it to the buyer. The buyer matches it against his commodity description card, and inserts buying information—vendor, price, etc. After the requisition is processed and the purchase order issued, the card is filed in the purchasing records department.

These, of course, are only preliminary, experimental steps. When their use has become routine, the cards may be gradually changed and pre-punched with basic information, so that variable, fill-in data is kept to a minimum. This variable data can then be quickly punched and the cards fed into electronic machines that will automatically write the order.

NEW SUBSCRIPTION ORDER

Enter a new subscription to PURCHASING and bill me for one year, $4.

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COMPANY .....

ADDRESS .....

.....

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205 E. 42nd ST., NEW YORK 17, N. Y.

The Pulse of Business

APRIL, 1956

PURCHASING'S
Summary of economic conditions

The boom is tapering off. For the first time in a year and a half, the Federal Reserve production index declined a point, to 143. Auto output is off more than 10% from a year ago. Production of other major consumer durables such as appliances is also off about 10% from the highs of last fall.

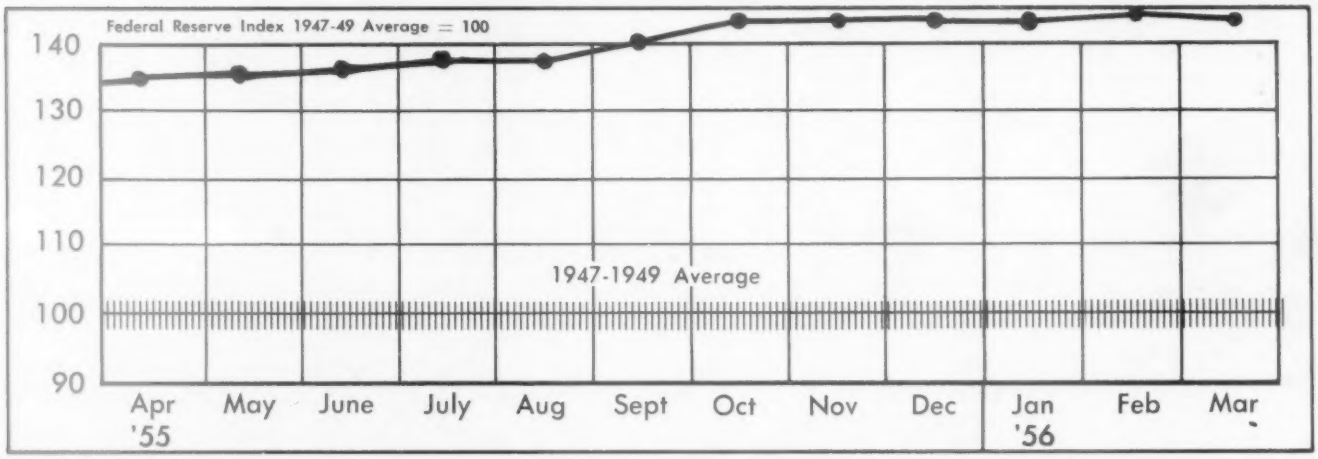
Major reason for the declines is last year's rapid expansion of consumer debt. Many consumers must pay their bills before they assume additional obligations. This is presumably what caused latest figures for installment debt to take a slight dip.

Despite the slowdown, confidence in the economy is probably at a record high. The stock market has surged forward to new highs since President Eisenhower announced his intention to run again. Industry continues to raise its sights on expansion in '56. Latest estimates indicate plant outlay will hit $35 billion - a jump of 22% from last year's record total.

The let-up in consumer spending may be more temporary than most economists have predicted. A recent survey by the Federal Reserve Board indicates that consumers plan to spend as much this year as they did in 1955. Consumer confidence is still very high. According to this survey, 39% of the consumer spending units feel they are better off now than they were a year ago. Only 23% feel they are worse off. Also, there are signs of a turning point in home building; the end of the current slump is in view.

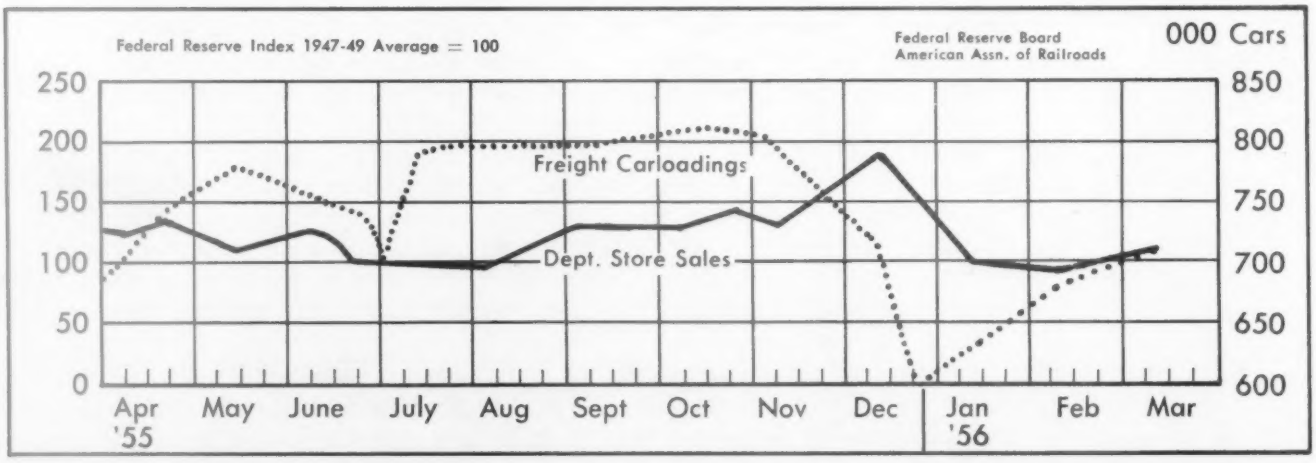
Purchasing agents seem to be betting their companies' money on continued prosperity. Inventories continue to grow; they've probably already reached an all-time high. Heavy demand continues to push metals prices to new records. In fact, 42% of the members surveyed by the Purchasing Agents Association of Chicago report higher prices, while none report lower prices, for major purchased items. The survey also shows that the supply situation does not appear to be easing; 30% of the respondents report slower deliveries by vendors while only 10% say they are faster.

PRODUCTION



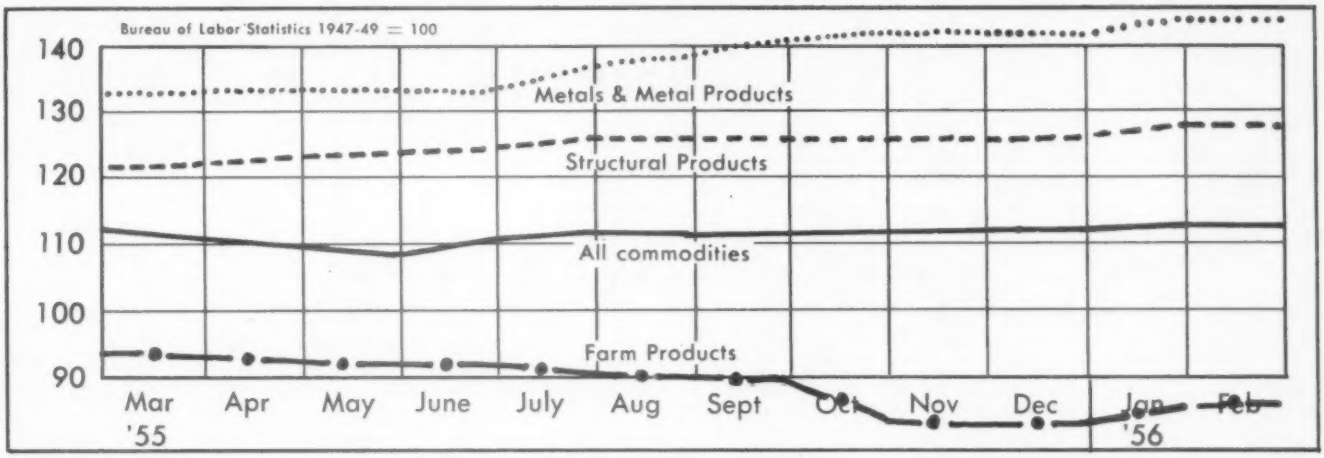
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index	1947-49=100	143	144	133	— 0.6	+ 7.4
Steel Production (Weekly)	000 net tons	2,422	2,403	2,241	+ 0.8	+ 8.1
Electric Power Production (Weekly)	mil KWH	11,199	11,540	9,727	— 3.0	+15.1
Bituminous Coal Production (Weekly)	000 net tons	9,885	9,825	7,780	+ 0.6	+27.1
Auto, Truck & Bus Output (Weekly)	units	159,020	168,377	183,748	— 5.6	—13.5
Petroleum Output (Daily Average)	000 bbls.	7,014	6,954	6,692	+ 0.9	+ 4.8

TRADE



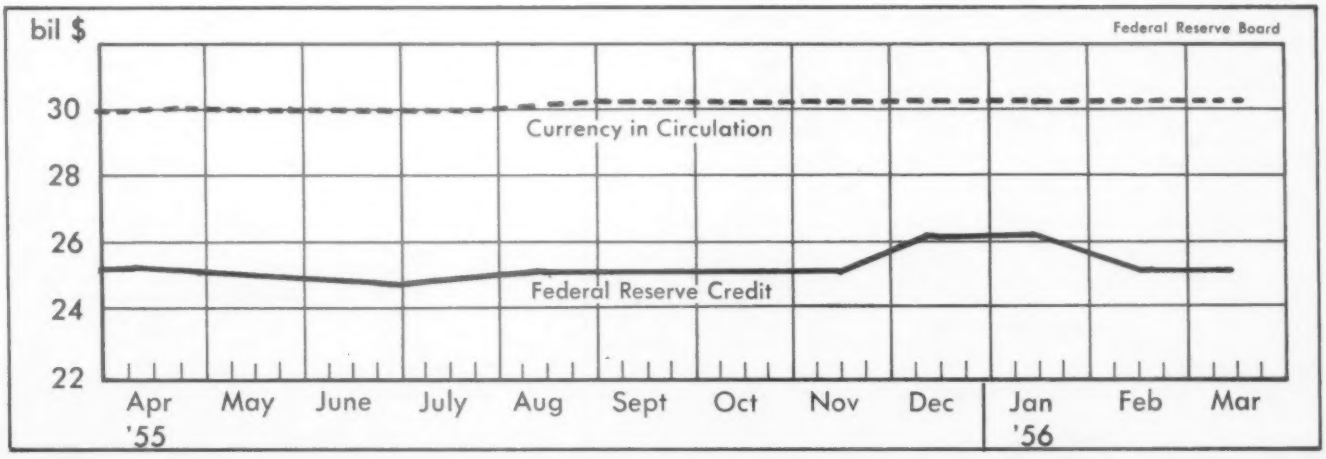
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Stores Sales Index (Fed. Res.)	1947-49=100	104	90	98	+15.6	+ 6.1
Commercial Failures (Dun & Bradstreet)	no.	293	273	222	+ 7.3	+32.0
Freight Carloadings	cars	710,996	680,989	653,575	+ 4.4	+ 8.8
Miscellaneous Carloadings	cars	378,087	352,230	362,310	+ 7.3	+ 4.4

PRICES



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS)	1947-49=100	112.3	111.9	110.4	+ 0.4	+ 1.7
Farm Products	1947-49=100	86.0	84.1	93.1	+ 2.2	— 7.7
Metals & Metal Products	1947-49=100	145.0	145.1	130.1	— 0.1	+11.5
Structural Products	1947-49=100	127.2	127.0	122.0	+ 0.2	+ 4.3
Steel Billets (Pittsburgh)	net ton	$68.50	$68.50	$64.00	0	+ 3.2
Steel Scrap, heavy melting, Pitts	net ton	47.50	50.50	38.50	— 6.0	+23.4
Copper, electrolytic	lb.	.46	.43	.33	+ 7.0	+39.3
Rubber (rib-smoked sheets)	lb.	.35½	.49½	.32¼	—28.3	+10.0

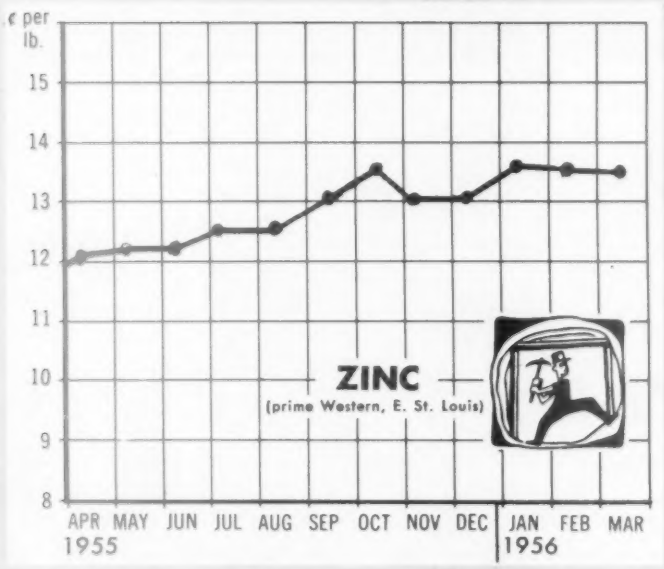
FINANCE

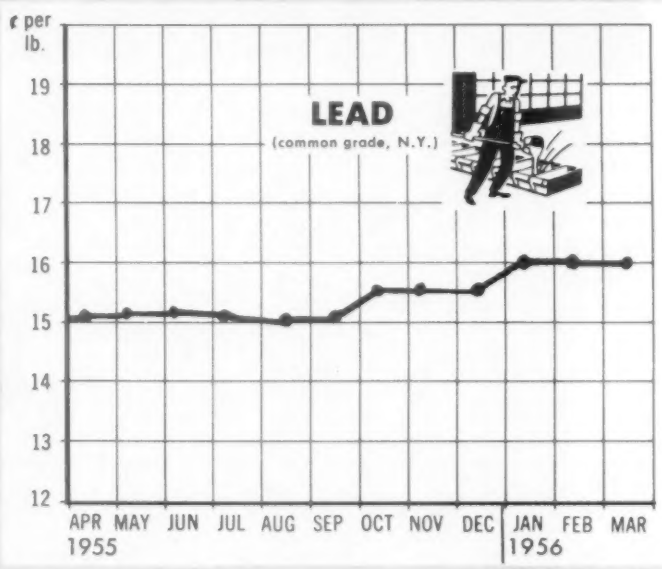


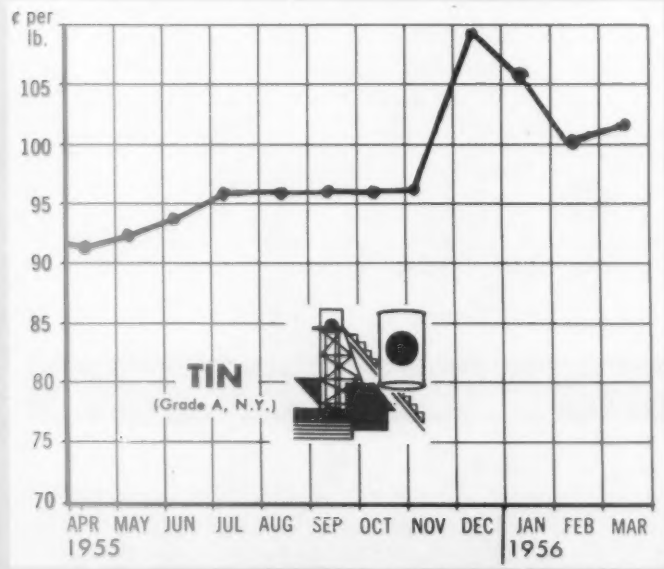
	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Stock Prices (Standard & Poor's)	1926=100	366.2	346.7	289.4	+ 5.6	+26.5
Bank Clearings (New York)	mil $	10,335	9,976	9,831	+ 3.6	+ 5.1
Federal Reserve Credit	mil $	25,118	25,104	24,714	+ 0.1	+ 1.6
Currency in Circulation	mil $	30,202	30,205	29,816	0	+ 1.3

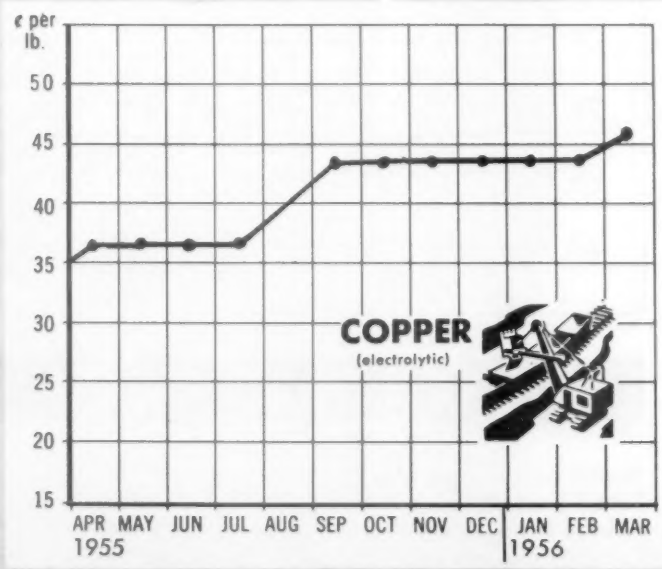
Copper Price Rises Continue, Latest Increase: 3c

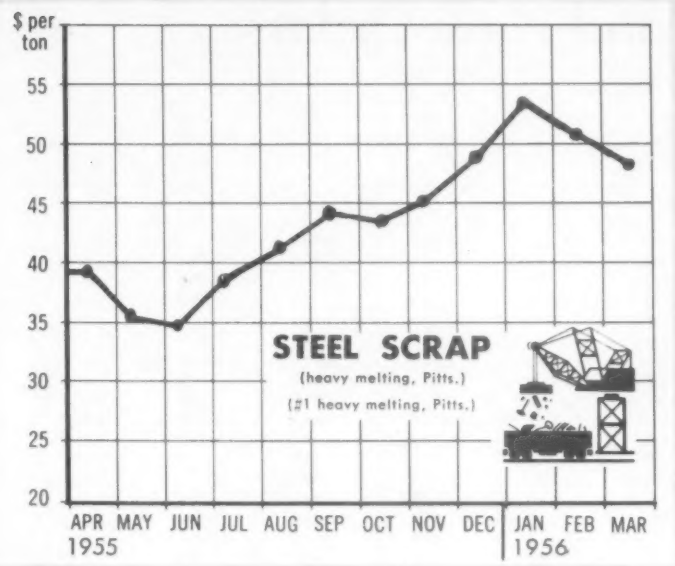
Extremely strong worldwide demand continues to put upward pressure on copper prices. Large domestic producers recently established a new price of 46¢/lb. This is about 40% higher than the year-ago price for the red metal and almost triple the 1949 price. But 46¢ copper is still a bargain relatively speaking. Because they must depend upon foreign markets (where prices are much higher) or scrap (which currently costs nearly as much as the virgin metal), custom smelters charge about 54¢/lb. Copper companies aren't too happy about the record prices. They're afraid copper consumers will be permanently driven into substitute materials.

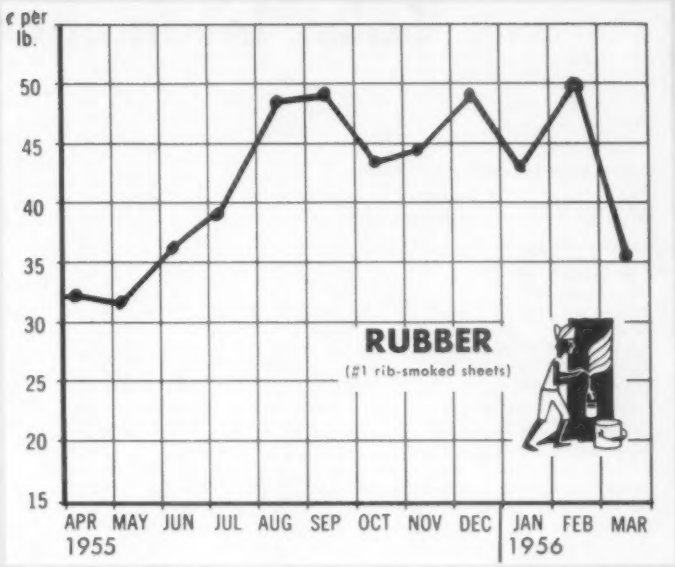


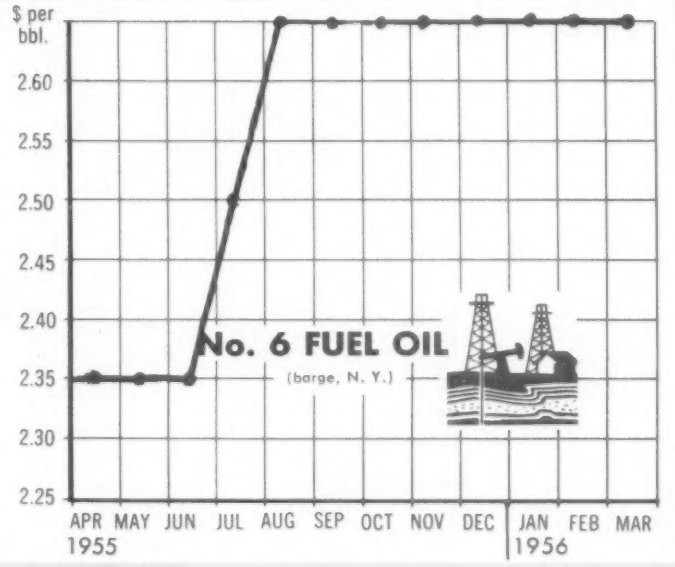


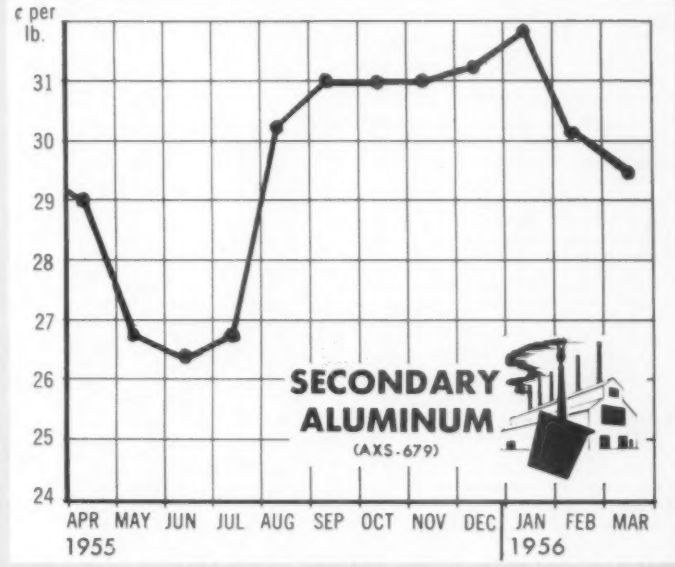


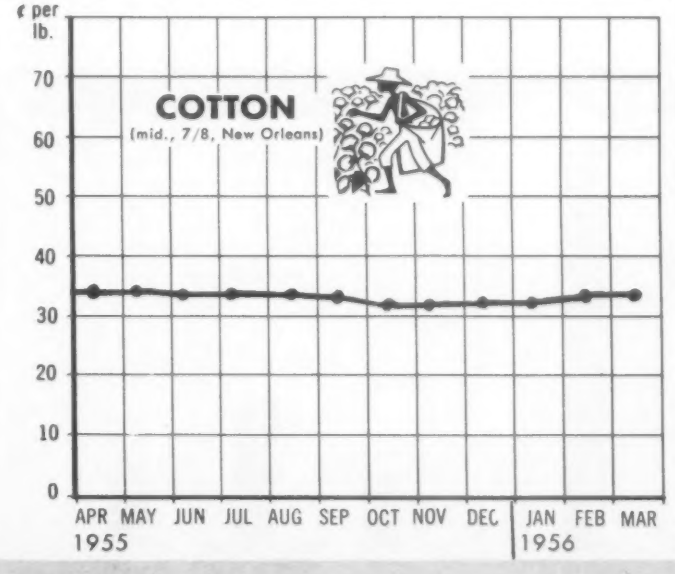


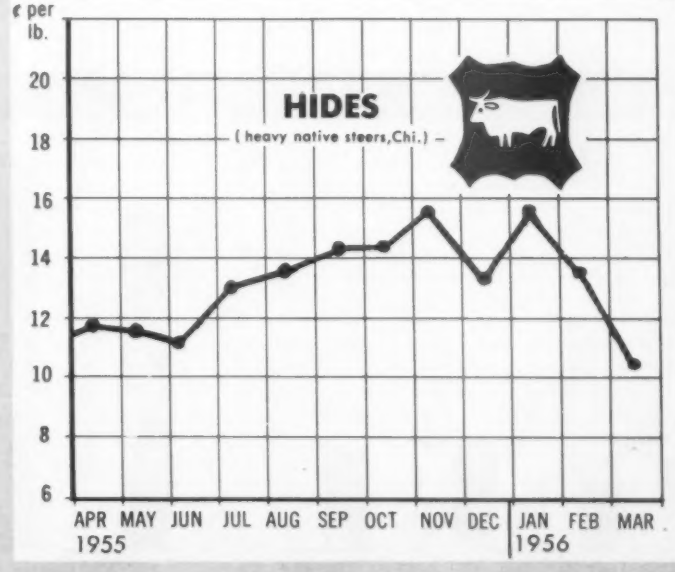

$ per ton
55
50
45
40
35
30
25
20
STEEL SCRAP
(heavy melting, Pitts.)
(#1 heavy melting, Pitts.)
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
1955
1956


¢ per lb.
50
45
40
35
30
25
20
15
RUBBER
(#1 rib-smoked sheets)
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
1955
1956


$ per bbl.
2.60
2.55
2.50
2.45
2.40
2.35
2.30
2.25
No. 6 FUEL OIL
(barge, N. Y.)
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
1955
1956


¢ per lb.
31
30
29
28
27
26
25
24
SECONDARY ALUMINUM
(AXS-679)
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
1955
1956


¢ per lb.
70
60
50
40
30
20
10
0
COTTON
(mid., 7/8, New Orleans)
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
1955
1956


¢ per lb.
20
18
16
14
12
10
8
6
HIDES
(heavy native steers, Chi.)
APR MAY JUN JUL AUG SEP OCT NOV DEC JAN FEB MAR
1955
1956

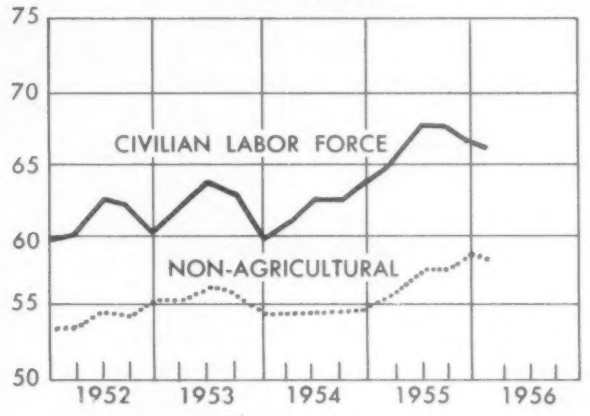
Sales, Inventories and New Orders

	1955					1956
	Jan.	Sept.	Oct.	Nov.	Dec. (r)	Jan. (p)
Value of Manufacturers' Sales Seasonally Adjusted (Millions of Dollars)						
All manufacturing industries	24,287	27,224	26,637	27,343	27,300	27,121
Durable-goods industries	11,850	13,692	13,261	13,721	13,688	13,634
Primary metal	1,829	2,394	2,324	2,393	2,341	2,369
Fabricated metal	1,123	1,436	1,382	1,395	1,375	1,423
Machinery	3,075	3,474	3,472	3,553	3,648	3,738
Transportation equipment	3,221	3,438	3,252	3,576	3,460	3,205
Lumber and furniture	1,026	1,236	1,131	1,144	1,124	1,117
Stone, clay and glass	586	670	665	655	674	644
Other durable goods	990	1,044	1,035	1,005	1,066	1,138
Nondurable-goods industries	12,437	13,532	13,376	13,622	13,612	13,487
Food and beverage	3,993	4,249	4,104	4,047	4,095	4,103
Tobacco	298	319	327	327	337	328
Textile	1,068	1,131	1,112	1,197	1,126	1,085
Paper	741	870	877	886	873	879
Chemical	1,740	2,010	1,939	2,014	1,959	1,918
Petroleum and coal	2,293	2,346	2,339	2,479	2,495	2,483
Rubber	424	456	447	482	476	n.a.
Other nondurable goods	1,880	2,151	2,231	2,190	2,251	2,215
Book Value of Manufacturers' Inventories Seasonally Adjusted (Millions of Dollars)						
All manufacturing industries	43,196	44,703	45,356	45,669	45,885	46,217
Durable-goods industries	23,984	25,182	25,659	26,050	26,317	26,519
Primary metal	3,239	3,305	3,426	3,491	3,494	3,540
Fabricated metal	2,417	2,757	2,726	2,759	2,740	2,709
Machinery	7,804	8,110	8,240	8,397	8,494	8,698
Transportation equipment	5,838	6,136	6,331	6,475	6,603	6,575
Lumber and furniture	1,719	1,795	1,843	1,843	1,837	1,872
Stone, clay and glass	865	914	947	948	956	973
Other durable goods	2,102	2,165	2,146	2,137	2,193	2,152
Nondurable-goods industries	19,212	19,521	19,697	19,619	19,568	19,698
Food and beverage	4,558	4,392	4,497	4,450	4,382	4,369
Tobacco	1,852	1,763	1,759	1,779	1,795	1,826
Textile	2,354	2,397	2,397	2,426	2,471	2,475
Paper	1,028	1,026	1,049	1,041	1,052	1,079
Chemical	3,020	3,188	3,190	3,157	3,199	3,283
Petroleum and coal	2,634	2,787	2,824	2,768	2,731	2,741
Rubber	790	874	902	935	896	n.a.
Other nondurable goods	2,976	3,094	3,079	3,063	3,042	3,029
Manufacturers' New Orders (Seasonally Adjusted)						
All Manufacturing Industries	24,641	28,301	27,466	28,315	29,306	28,131
Durable goods industries	12,142	14,936	14,094	14,680	15,605	14,710
Nondurable goods industries	12,499	13,365	13,372	13,635	13,701	13,421

p — preliminary r — revised n.a. — not available

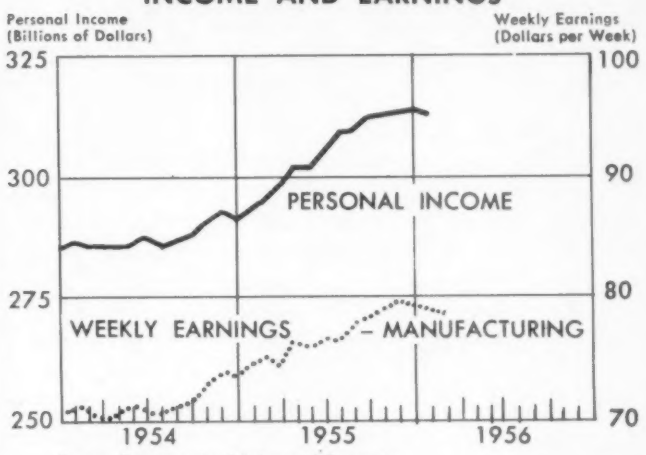


EMPLOYMENT
(in millions)



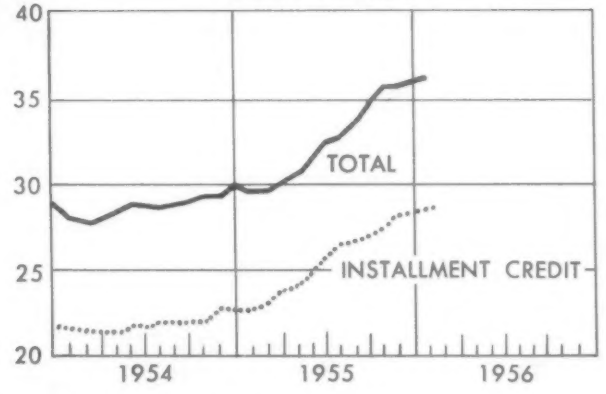
Source: Bureau of the Census

INCOME AND EARNINGS



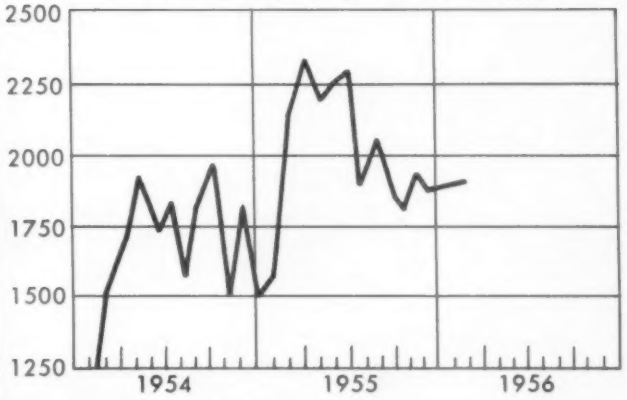
Source: Departments of Labor and Commerce

CONSUMER CREDIT
(billions of dollars)



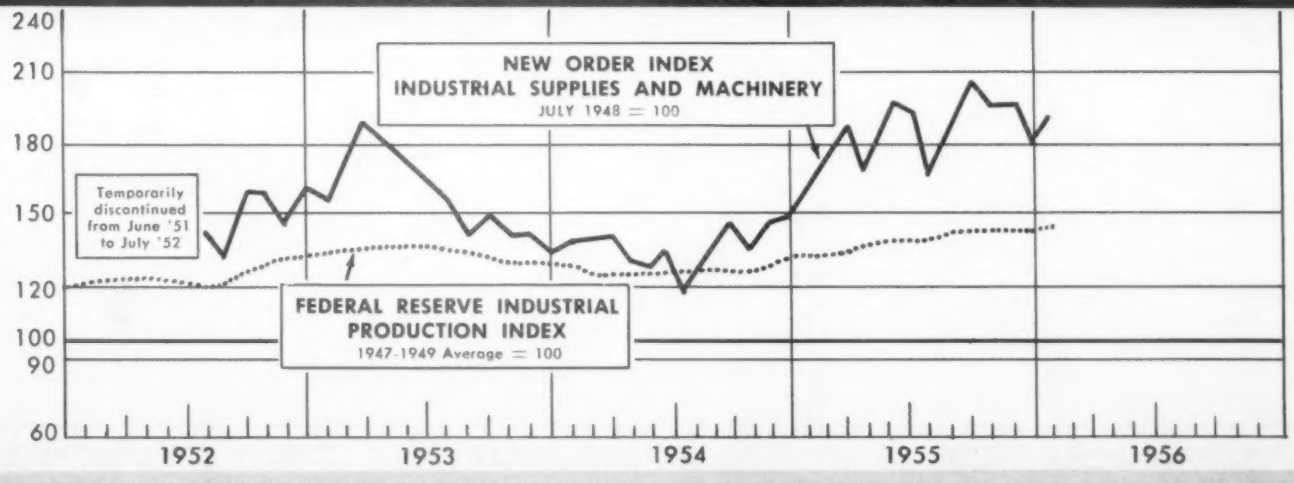
Source: Federal Reserve Board

CONSTRUCTION
(contract awards 37 eastern states)



Source: F. W. Dodge Corporation

NEW ORDER INDEX INDUSTRIAL SUPPLIES AND MACHINERY



Source: American Supply & Machinery Manufacturers' Association

Straws in the Trade Wind

PUBLIC SPENDING TO GROW - A study by the Departments of Labor and Commerce shows a need for non-federal spending of $2 billion per year for the next 10 years for highways, schools, hospitals, sewer and water facilities, and other state and local projects. This is double the current rate of spending for such items. The step-up is necessary to meet the demands of a growing and shifting population. It will provide considerable impetus to continued economic growth.

STEEL STILL A BOTTLENECK - The cut-back in auto production has not hurt the steel business. In fact, mill executives report, business is still too good. Demand can't be met despite capacity operations. As a result, premium prices are being paid, especially for plates and structural shapes. This is hurting a lot of industries. For example, shortages make it impossible for rail car builders to increase deliveries beyond current rates. One reason for shortages may be excessive inventory build-ups in certain industries.

TEXTILES PICK UP - A brisk second quarter is in prospect for most textile makers. Cotton woven goods stocks at mill level are at their lowest point in years. There are enough unfilled orders to take three months' output. Although the rayon market has been shaky, producers were recently delivering 14% more fiber than during the same period a year ago.

FREIGHT RATES RISE - Transportation costs continue to rise. The railroads expect an additional $423 million in revenue from their recent 5% average rate increase. Higher labor costs will probably force another round of tariff increases by truckers in coming months. There's but one bright spot on the horizon for shippers: if railroads succeed in persuading the regulatory authorities of the desirability of more flexibility in rate setting, there will be more intense competition between rails and truckers.

AIR CARGO GROWS - Not too long ago, air cargo was a sideline designed to keep passenger planes fully loaded. Now it's big business in itself. Special planes carry nothing but cargo. Prospect is for continued growth. United Air Lines, for example, expects its air cargo revenues to rise from $8.8 million in 1955 to $11 million this year. To increase its share of the market, United has added five DC-6A all-cargo planes to its fleet.

STANDARDS and the Purchasing Agent

STANDARDS are far more prevalent and more important throughout all industry than is generally appreciated. Here's a basic analysis of the standardization process that will help you to develop and use standards more effectively.

By Eugene S. Page

IT IS AMAZING that something so necessary, and now so commonplace, as Standardization has to be "sold"—even to the point of comic-book type presentations. Anything to arouse interest! To this writer, it seems that there has been too much promotion and not enough understanding.

Perhaps one of the fundamental shortcomings of the standardization movement is that, rather inconsistently, there are no standard classifications of standards, either by type or purpose. Thus, a subject that ought to be quite precise in the organization of its own method and science, is left in a twilight zone of vagueness that does not encourage full comprehension and application. Responsibility for standards is similarly vague. In the majority of companies, the work of standardization is a sideline activity, or is done piecemeal—uncoordinated, function by function. There is little glamor or reward here. Busy top management is not well informed and rarely gets to the root of the subject. As a result, attention, interest, and action on standards are frequently too little and too late, or at least far short of the immense potential.

A Basic Tool

Our purpose here is to go back to the fundamentals and, by so doing, to set up a few basic mental tools which will help you to comprehend, use, and value standards—all standards—in the complete range of your activities, for the rest of your life. That may be a big order, but if we approach it analytically, step by step, it can be done. And it is well worth doing.

Let's start with a definition. A standard is a solution to a recurring problem, i.e., it is the best answer now available, in the light of present knowledge, developed with due consideration for all technical and economic factors. It is to be revised whenever a better way is found, or whenever the problem changes.

There are only two kinds of standards—those which are Methods, and those that apply to Objects. (In the completely fundamental sense, it may be argued that all standards are Methods, since objects are produced by method. However, for practical purposes, both types should be recognized.) Every standard now existing, or to be developed for any purpose, will fit clearly and completely into one of the following classifications.

I. **Standard Methods**—the manner in which any type of action shall be performed, for a specific purpose. There are two broad categories under this heading:
   - A. **Management Standards**—business policies, practices, and procedures, formal and informal.
   - B. **Technical Standards**—technical information, and rules for its use, in terms of:
     1. *Data*—facts, figures, and symbols, and methods for their interpretation and use.
     2. *Flow*—methods by which objects shall be treated for purposes of: (a) Identification (b) Selection; (c) Movement; (d) Storage; (e) Safety; (f) Process; (g) Test.

II. **Standard Objects**—specification of any material or commodity in terms of:
   - A. **Properties**—statement of "what it is", ac-

cording to basic quality designations, including:

1. *Chemical* — analysis, and reaction characteristics.
2. *Electrical.*
3. *Nuclear.*
4. *Physical*—structure, size, dimensions, bulk, and weight.
5. *Finish*—texture and color of surfaces.

B. Performance—strength and ability to accomplish the intended purpose, and/or capacity to perform work, including the specification of quality of work to be done and/or quality of commodity to be produced.

C. Endurance—extent of endurance in terms of time and/or volume of accomplishment.

Here we have a simple, basic, and universal classification of standards. Once you have mastered this concept, it will clarify the whole subject and serve as a purposeful guide to better use of standardization. If your first impression is one of oversimplification, at variance with common practice, it is probably due to one of two reasons:

1. Many so-called standards are not *single* standards at all, but varying combinations. For example, a "standard" which gives the chemical analysis of coking coal may also define the method by which compliance is determined. One that lists the calorific values of fuels will also usually specify the method of measurement. A safety code for building construction will be a complex arrangement of building materials, design and use of products and tools.

2. Common practice is to group standards, not according to their basic type but, again, in varying combinations of:

a. Purpose (e.g., Safety Standards)
b. Products (e.g., Incandescent Lamps)
c. Industries (e.g., Automotive)

This manner of classifying is sound and useful, so far as it goes; in particular, it provides a ready reference to existing standards. However, it does not contribute to the basic understanding of standardization in the broader sense, and how a particular standard fits into the general principle.

Standards and Purchasing

Now, to take a practical view. You are a purchasing agent. You have many vital interests and concerns that are outside the popular conception of standards. But are they, really? Let's take a look.

In order to perform your function, you need both a sound organization and a simple but adequate system for making and executing business decisions. But these are Management Standards —your method of operation. They came first in our analysis, just as they come first with you.

Then, whatever you buy is technical, in a sense. It must be identified and presented to you —and beyond—by the use of Data (I-B-1 in our tabulation). Mathematical symbols, letter symbols and abbreviations in every field of engineering, and graphical symbols for use on drawings—all these are essential, constituting the common language of the engineer and the purchasing agent. The American Standards Association has many standards of this type. Here are rules for expression and delineation, common as rain, but definitely standards, none the less.

While using these first tools, your engineers and production people are dealing with materials, commodities, machines, and parts. Elements of Flow are next employed (I-B-2). They must be identified and selected. The first requires standards established by your company, the vendor, or a specialized industrial association. The second is based on intended purpose or performance required, i.e., the standard of need you have established. ASA's Standard on Preferred Numbers (Z 17.1-1936, R 1951) will be valuable in selecting sizes within a desired range. Of course, every item purchased must be moved and stored, usually processed, and properly tested, all in safety. These factors dictate methods of treatment and specification of products to facilitate such treatment. Obviously, then, technical methods of Data and Flow are constantly used in determining what you, the purchasing agent, will buy.

So we observe how standards serve as a means of communication. Engineers and operating directors have to specify requirements, in terms of purpose, performance desired, or properties, or all three. In these vital transactions, there is the greatest need for a clear meeting of the minds—between the purchasing agent and those in his company responsible for product definition, on the one hand, and between the purchasing agent and vendor, on the other. Standards serve this purpose. Even in the most informal transaction, the basic principles of standards fill the need.

We may go one step further. An essential ingredient of every business transaction is the definition and placement of responsibility. Generally, when you enter a statement of performance or endurance required, in your purchase order, the responsibility therefore is on the vendor. If such is omitted, and you define only properties, responsibility for performance is on the buyer. These are vital considerations.

The point of all this is that our basic tool, the analysis of Methods and Objects, is much more than the foundation of standards. It is as broad as industry itself. It is the beginning of management, the means of communication, the placement of responsibilities, and the heart of product and operating performance. Its application in clarify-

ing problems, and in aiding the work of all business activities, is universal.

Industry Standards

Secondary (and useful) ways of classifying standards have been mentioned—by Industry, Products, and Purpose.

Standards by Industry are important to the buyer. He will want to know those of the industry in which he works, be it Automotive, Chemical, Electrical, Textile, or whatever. Here is a wealth of information to aid in evaluating major capital and operating requirements. Likewise he will want knowledge of all available standards for the industries from which his major commodities are purchased. These will include both Methods and Object standards.

Within each industry, standards are grouped by Products. These also run the full gamut of types. Standards on pipe, for example, will deal not only with sizes and dimensions, but also with identification systems, methods of manufacture, materials, threads, and pressure capacities. The purchasing agent, of course, is directly concerned with all these factors.

Standards by Purpose are less common, and less understood, but are potentially of great value. These cut across both the other groupings, as well as embracing both Methods and Objects.

All of these are standards developed and used on a broad scale and on a commercial basis—outside your company. Economic considerations created by problems of cost availability, interchangeability, and inventories, demand that your business employ such "common" standards to the greatest possible extent, in preference to any you may want to develop for yourself. That is, of course, provided that the common industry standard satisfactorily meets your requirement.

Company Standards

We shall not dwell here upon Standards of Management. Rather, let us give our attention to the Technical Standards used in your company, and the four principal purposes they serve.

I. Design Engineering. Standards are used in the design of products and the design of tools for production. Usually, the two functions involve separate engineering groups, but the standards should be the same. The principal types are:

A. Design Data, including:

1. *Definitions and Nomenclature*—The basic elements on which design rests, essential for communication and common understanding.

2. *Properties and Performance*—Accepted chemical, electrical, and physical attributes of basic materials from which finished products and tools will be fabricated.

3. *Dimensions and Tolerances*—System of limits and fits, parallelism and squareness, and other dimensional rules for use in design of products and tools.

4. *Optimum Selections*—Methods of selecting most favorable sizes and capacities of products and tools.

B. Engineering and Drafting Practice—Standard methods by which the design data is to be interpreted and used, and the manner in which products and tools shall be delineated on drawings.

The purchasing agent's concern in these standards, which are primarily of an engineering nature, lies in the fact that he is responsible for procuring the materials, supplies, and equipment to carry out the design. Consequently, the efficiency and costs of purchasing (as well as of manufacturing, and the end profit of the entire operation) begin with the competent use of sound standards.

If the design uses "specials", if tolerances are unnecessarily close, if sizes are unusual, or if drawings are not clear—the purchasing agent's job is more difficult, costs go up, and delivery time increases.

If design is not sound, from both technical and economic viewpoints, the service the purchasing agent can render in value analysis and make-or-buy decisions is reduced or blocked.

II. Materials and Products. Here we have standards expressed in the specifications—properties and performance—of every commodity flowing through the shop. Obviously these are vital to the purchasing agent who has to buy them.

Again, "specials" increase costs, reduce availability, and lengthen buying time. The variety specified directly affects quantities of individual items, volume prices, and total buying costs. Both of these considerations also have a bearing on problems of fluctuation in demand and adequate inventory control.

III. Manufacturing. These are the standards of material flow and processing, often expressed in the form of "Operation sheets". This is in the province of manufacturing, and is largely outside of any control by purchasing. Nevertheless, purchasing is concerned for several reasons:

Methods of handling affect product specifications, especially on weight and dimensions, and the procurement of handling equipment. Methods of processing determine the tools required. Both aspects of flow affect the purchasing agent's objective of lowering costs—through new design, new methods, or by purchase from outside source.

IV. Quality Control. This concerns the standards by which the results of material flow are judged—accepted or rejected.

The Quality Control department appraises the

(*Please turn to page* 350)



MATERIALS ARE MONEY

Acushnet's three-part program of materials control for economical purchasing and inventory operation

By W. J. Roemer
Director of Purchases
Acushnet Process Company, New Bedford, Mass.

William J. Roemer, Director of Purchases for the Acushnet Process Company, has been active in purchasing work for the past sixteen years, and has been associated with Acushnet since 1951.

He was for many years a member of the Purchasing Agents Association of Connecticut, and served as president of that organization in 1946. He transferred his membership to the New England Purchasing Agents Association upon coming to New Bedford and has also organized a local group—the Purchasing Agents Association of Southeastern Massachusetts—comprising industrial buyers in the Taunton-Attleboro-New Bedford area.

As precision molders of natural, synthetic rubber and silicones, Acushnet Process Company has for many years been asking American Industry the question: "What's Your Shape?"

The ability to compound rubber and mold it into thousands of unusual shapes such as the complicated Air Force oxygen mask and the "Flex-i-Liner" pump for the Heart-Lung Machine has made Acushnet the largest single plant in the country devoted exclusively to this type of work.

The Acushnet Golf Ball Division, a complete facility separate from the rubber plant, produces a full line of golf balls sold the world over through golf course Pro Shops only. In major tournaments, more "Titleists" were played—by pros and amateurs alike—than any other ball.

The Purchasing Department headed by Mr. Roemer performs a dual service at Acushnet by serving both plants with their particular needs. Custom designed systems such as those described here have played a major role in the successful performance of Acushnet's Purchasing Department.

LOOKED at in simplest terms, materials are money. As such, they need as much management and control as any other investment, since they generally take the major share of a company's sales dollar.

In any good system of control, these basic points should be considered:

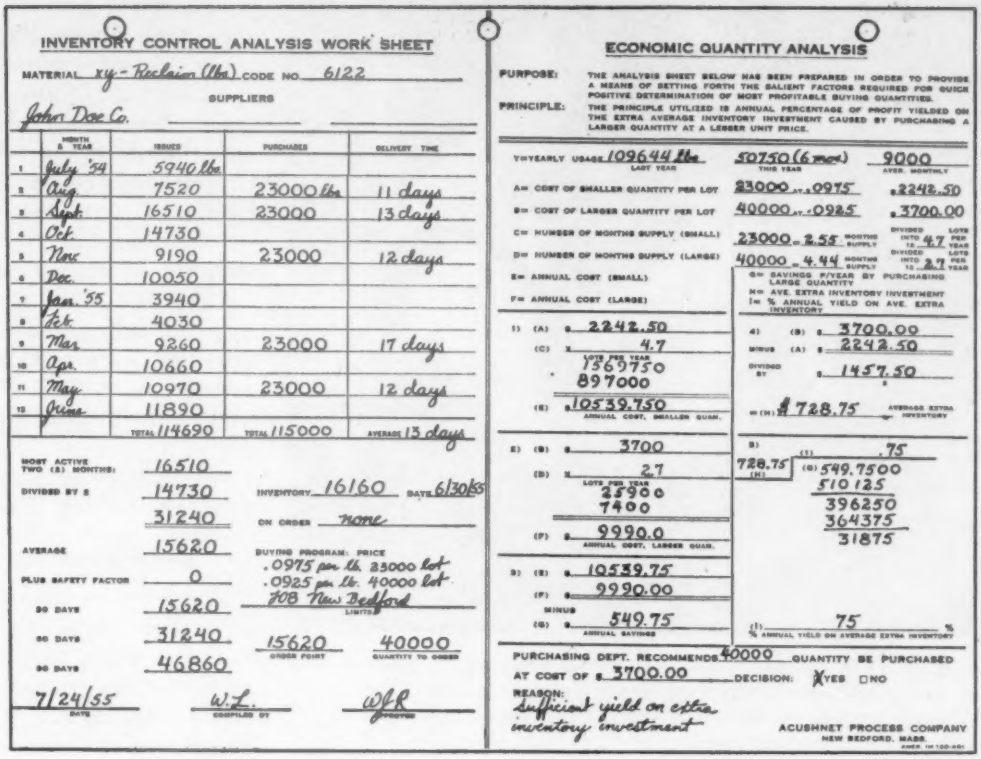
- **The kind and form of materials, as conceived by chemists or engineers in the development of a product.**
- **The way materials are unitized, packaged and shipped.**
- **How materials are received, stored and handled.**
- **The availability of materials, the right quantity to buy them in, and the perpetuation of inventory.**

Responsibility for control of each or all of these factors varies from company to company, according to nature and size. Generally, purchasing can play an important part all along the line, whether it exercises direct control or not. The very nature of purchasing's work, and its close contacts with vendors and markets make its aid indispensable.

The Materials Management program at Acushnet Process Company, New Bedford, Mass., places responsibility for controlling, scheduling, receiving, storing and issuing of purchased materials in the purchasing department. Each of these activities are integrated into an overall system that combines minimum investment in inventory, and maximum service to production. By-products are concentration of stores in one area, high efficiency and morale among warehouse personnel, and a big reduction in manhours expended on handling material.

The success of the system is due to the coordination of the following three important elements, each of which will be described in detail:

1. **A mathematically sound method of determining inventory levels and order quantities.**
2. **A simple, but effective, arrangement for handling administrative details of the program.**
3. **A warehousing set-up carefully planned for swift, efficient movement of materials from receiving to production, with as little handling and paperwork as possible.**



INVENTORY CONTROL ANALYSIS WORK SHEET

MATERIAL Xy-Reclaim (lbs) CODE NO. 6122

SUPPLIERS

John Doe Co.

	MONTH & YEAR	ISSUES	PURCHASES	DELIVERY TIME
1	July '54	5940 lbs.		
2	Aug.	7520	23000 lbs	11 days
3	Sept.	16510	23000	13 days
4	Oct.	14730		
5	Nov.	9190	23000	12 days
6	Dec.	10050		
7	Jan. '55	3940		
8	Feb.	4030		
9	Mar.	9260	23000	17 days
10	Apr.	10660		
11	May	10970	23000	12 days
12	June	11890		
		TOTAL 114690	TOTAL 115000	AVERAGE 13 days

MOST ACTIVE TWO (2) MONTHS: 16510

DIVIDED BY 2: 14730

31240

AVERAGE 15620

PLUS SAFETY FACTOR 0

30 DAYS 15620

60 DAYS 31240

90 DAYS 46860

INVENTORY 16160 DATE 6/30/55

ON ORDER none

BUYING PROGRAM: PRICE
.0975 per lb. 23000 lot
.0925 per lb. 40000 lot
FOB New Bedford
LIMITS

15620 ORDER POINT

40000 QUANTITY TO ORDER

7/24/55 DATE

W.L. COMPILED BY

WJR APPROVED

ECONOMIC QUANTITY ANALYSIS

PURPOSE: THE ANALYSIS SHEET BELOW HAS BEEN PREPARED IN ORDER TO PROVIDE A MEANS OF SETTING FORTH THE SALIENT FACTORS REQUIRED FOR QUICK POSITIVE DETERMINATION OF MOST PROFITABLE BUYING QUANTITIES.

PRINCIPLE: THE PRINCIPLE UTILIZED IS ANNUAL PERCENTAGE OF PROFIT YIELDED ON THE EXTRA AVERAGE INVENTORY INVESTMENT CAUSED BY PURCHASING A LARGER QUANTITY AT A LESSER UNIT PRICE.

Y = YEARLY USAGE 109644 lbs. (LAST YEAR) 50750 (6 mos.) (THIS YEAR) 9000 AVER. MONTHLY

A = COST OF SMALLER QUANTITY PER LOT 23000 @ .0975 = $2242.50

B = COST OF LARGER QUANTITY PER LOT 40000 @ .0925 = $3700.00

C = NUMBER OF MONTHS SUPPLY (SMALL) 23000 ÷ 2.55 MONTHS SUPPLY — DIVIDED INTO 12 = 4.7 LOTS PER YEAR

D = NUMBER OF MONTHS SUPPLY (LARGE) 40000 ÷ 4.44 MONTHS SUPPLY — DIVIDED INTO 12 = 2.7 LOTS PER YEAR

E = ANNUAL COST (SMALL)

F = ANNUAL COST (LARGE)

G = SAVINGS P/YEAR BY PURCHASING LARGE QUANTITY

H = AVE. EXTRA INVENTORY INVESTMENT

I = % ANNUAL YIELD ON AVE. EXTRA INVENTORY

1) (A) $2242.50 × (C) 4.7 LOTS PER YEAR = 1569750 + 897000 = (E) $10539.750 ANNUAL COST, SMALLER QUAN.

4) (B) $3700.00 MINUS (A) $2242.50 = $1457.50 DIVIDED BY 2 = (H) $728.75 AVERAGE EXTRA INVENTORY

2) (D) $3700 × (D) 2.7 LOTS PER YEAR = 25900 + 7400 = (F) $9990.0 ANNUAL COST, LARGER QUAN.

3) (E) $10539.75 (F) $9990.00 MINUS (G) $549.75 ANNUAL SAVINGS

5) (I) .75 = (G) $549.7500 / (H) 728.75 = 510125 + 396250 + 364375 + 31875 = (I) 75 % ANNUAL YIELD ON AVERAGE EXTRA INVENTORY

PURCHASING DEPT. RECOMMENDS 40000 QUANTITY BE PURCHASED

AT COST OF $ 3700.00 DECISION: X YES ☐ NO

REASON: Sufficient yield on extra inventory investment

ACUSHNET PROCESS COMPANY NEW BEDFORD, MASS.

. . . ANALYZE INVENTORY AND ORDER QUANTITY

It is in the area of best order quantities and inventory levels that the purchasing agent can make one of his most important contributions. It is here that he can affect the company's profit position. It is here he can keep his company's investment in raw materials at a minimum, consistent with safety and economic advantage.

Good inventory control through good purchasing goes even beyond the sound investment of money. Some manufacturing operations are varied and flexible. They do not have the repetitive nature of mass production. In a company that makes a number of items, of diverse materials, for markets that are not always predictable, purchasing must gear itself to be an *asset* in maintaining this versatility of production. It must organize its buying activities and service to coordinate them with manufacturing needs. It must be prepared to play its part in meeting the company objective—complete satisfaction of the customers' requirements.

In situations of this type, the tendency often is simply to increase inventory as needs arise. But an effective purchasing department must look beyond the concept of merely getting the most material at the lowest cost. Delivery terms change rapidly on some commodities, and having an alert purchasing department "on top of the market" permit taking advantage of special situations. Similarly, purchasing is in the best position to judge the influence on costs of emergency shipments, or poor quality material rushed through to meet a special need, both of which can have unhappy results.

It is this weighing of service and costs to achieve the most profitable balance that is at the basis of scientific inventory management.

How The System Works

Acushnet's system begins with an "Inventory Control Analysis" and an "Economic Quantity Analysis." Both these techniques are illustrated on the accompanying form, which is used for all calculations.

In the example illustrated on this inventory control analysis work sheet, the reorder point has been set at 30 days supply, based on an average of the two peak months of the past year. Since this average (15,620 lbs.) is well above the mathematical average for the entire year (9,558 lbs.) and because delivery time required is within two weeks, no additional safety factor is needed. The expediting date, when stock reaches one-half of reorder point, still allows full normal delivery time, so that no stock-outs are anticipated.

Economical reorder quantity has previously been calculated at 23,000 pounds, or about 10 weeks supply.

Since there is a price break from 9.75 cents to 9.25 cents per pound in quantities of 40,000 pounds, the right hand section of the work sheet has also been used. It shows that buying in the larger quantity would result in a price saving of $549.75 per year, but would increase the average inventory investment by $728.75. The saving represents an annual yield of 75% on the additional investment. Any yield over normal carrying cost of 25% makes it economical to purchase the larger quantity.



Accurate and up-to-date stock records are maintained by posting information on withdrawals directly from completed warehouse requisitions. Additions to stock are entered from receiving reports. No records are kept in the warehouse.

The inventory control analysis is a review of the past history of activity on a material to arrive at an order point, and thus help to determine the right quantity to order.

The economical quantity analysis covers the salient factors needed for quick, positive determination of most profitable buying quantities. The principle used is *the annual percentage of profit yielded on the extra average inventory investment caused by buying a larger quantity at a lower unit price.*

If the accompanying chart is followed step by step it is just about completely self-explanatory. There are, however, some points that should be pointed out, to avoid misunderstanding.

Depending on experience with vendor delivery or transportation delays, you may want to add a week or two to the supplier's lead time, as was done in the example. Thus, if the lead time is 30 days from the supplier, you can make the order point 45 days, if necessary. On the other hand, if a supplier normally furnishes material within a week, you can set your order point at 30 days' supply, and schedule shipment on a specific day. *Expediting at Acushnet begins when quantity of material in stock has reached one-half the order point.*

The formula on the right hand side of the form is used only when there is a price differential on transportation and quantity discount. Otherwise the order quantity and number of orders per year is entirely up to the buyer. It is good practice, in any event, to have the ordering quantity in the neighborhood of 60-90 days supply.

Figure H (Average Extra Inventory) is obtained by taking half the difference between A and B, because the average stock resulting from any size order is always half the size of the order.

Always keep in mind that the object of the formula is the percentage figure shown at I on the analysis sheet. This is the percentage yield on the extra inventory investment involved in purchasing the larger quantity. That means that if you have a 100% yield, your savings would pay the extra average inventory investment in a year's time. A 200% yield would pay the investment in six months, and a 50% yield would pay it in two years. Anything above 25% is a good yield. *Acushnet aims at getting between 25% and 50% — but many have run higher than that, some well above 300%.*

Obsolescence and inventory investment costs are not included in the formula. Neither are the savings in actual handling costs in writing fewer purchase orders. The formula could, of course, be adapted to include these items. It seems clear, however, that the yield figure would compensate for these items—a 25% or better yield being considered adequate to cover the loss items.

Benefits of the System

The benefits Acushnet has had from this relatively simple system are many, and should accrue to any other purchasing department adapting it. Among the more prominent of these are the following:

1. Purchasing and inventory control are done more economically.
2. Guesswork and spot judgment in buying is replaced by sound, mathematical reasoning.
3. Maximum inventory never exceeds the sum of the order point and the order quantity.
4. Minimum inventory is never less than one-half of the order point.
5. Normal inventory will average slightly above order point and will be correct at any point between one half the order point, and the sum of the order point and order quantity.
6. Overstocks of slow movers and understocks of fast movers are eliminated.
7. The right amount of inventory for any business cycle can be determined immediately.
8. Inventory is accurately controlled at all times, thus preventing losses and creating profits.
9. Cost of possession and cost of acquisition are reduced, resulting in ideal turnover of inventory dollars.
10. Guiding factor of 25-50% annual yield on extra investment affords quick return on money.
11. Many dollars formerly tied up in inventory are now freed for other purposes.

. . . KEEP PAPERWORK SIMPLE

The next step in an effective materials control program is to integrate it with the activities of the group handling receipt, storage, and issuance of purchased goods. This calls for a simple but accurate system of paperwork.

At Acushnet, requisition cards are turned in to the warehouse by the production department as they require material. After the warehouseman completes the card, showing amount issued, and (usually) the amount remaining in stock, he forwards them to purchasing.

The accumulated cards are recorded in purchasing on the Postindex file. This record shows, on two facing cards for each item, a complete and current history of the item. The upper card is the purchase record, with a tabulation of monthly usage over a period up to three years. The lower card is the inventory record, showing receipts, issues, and balance on hand. The reorder point and quantity, determined through the method described above, are noted on this card.

As issues of material are posted to the inventory card, a constant check is made to see if the stock balance has reached the reorder point. If it has, purchase and inventory cards are removed and given to a buyer for the necessary purchase action. When the order is issued and the cards returned to the Postindex file, a blue signal tab is attached to the bottom (index) edge of the inventory card indicating that an order has been placed for the material. It remains there until the order has been completed, providing a quick visual index to open orders.

Subsequent issues of material between the time an order is issued and the time the order is delivered will of course deplete the stock still further. This is normal and expected, and has been considered in setting reorder points and quantities. In the continuing check, made as these additional issues take place, and are posted, the next key point to note is whether the inventory of an item has reached *half* its reorder quantity before the newly ordered material has been received. If this occurs, a red signal tab is attached to the card to the right of the blue one, indicating the need for expediting the open order so that a serious shortage does not occur.

The issues, as posted on the inventory card, are totalled at the end of each month and are entered in the "Monthly Consumption" column on the purchase card. This shows at a glance whether the rate of issues and usage is increasing or decreasing. If there is any considerable change in this activity, another economic quantity analysis is made. If necessary, new reorder points and reorder quantities are then assigned to the item.



This Postindex record is the heart of the materials control system, combining all pertinent purchasing and inventory information on each item at the central control point in Purchasing.

Lower card is the inventory record, showing receipts, issues, and balance on hand for each item. Daily posting of issues gives immediate notice when stock level is down to the reorder point. A blue signal tab on the visible margin indicates that a purchase order has been issued but that the material has not yet been received. A red signal tab indicates critically low supply and signals follow-up action on the open order.

Upper card is the purchase record. A tabulation of monthly consumption, taken from the inventory record card, shows trends of usage. Significant changes in this column are the signal for reconsideration and possible changes in reorder points and quantities.

. . . ADAPT WAREHOUSING TO CONTROL PROGRAM

Turning from mathematical formulas and paperwork, one has to consider the materials themselves—the "mass" that has to be handled, moved, in bulk or in small lots, from the supplier to the buyer's production line.

The photographs herewith show eloquently how sound policy determinations, coordinated with intelligent planning in respect to space and handling, round out a good materials program. The savings and improvements in utilization of storage space, housekeeping methods, labor, and general efficiency in Acushnet's stores are numerous enough to warrant a story in themselves. Many of them can be easily deduced from the pictures and descriptive captions.

Some indication of the over-all benefits can be obtained from a comparison of manhour figures. In 1954, the warehouse personnel handled a gross total of 11,277,000 pounds with 7,750 manhours. In the first 10 months of 1955, under the new system, they handled a

gross of 13,135,803 pounds with only 7,198 manhours.

Much credit for the efficiency in storage and movement of materials must go to Acushnet's vendors and production people. The former have worked closely with the purchasing department by shipping in unit loads, according to Acushnet's needs and instructions. Production has cooperated, from its end, by agreeing to draw materials in specified unit lots, thus simplifying movement of materials and record keeping, and eliminating the housekeeping and handling problems that often result from broken lots.



STORING IS SAFE AND SIMPLE. With advance knowledge of data developed by the formula described, the warehouse manager can allocate exact storage area for incoming materials shortly before their arrival. The amount on hand plus current shipment makes up the maximum quantity in inventory. Unit loads determine space required. Here a material handler is storing synthetic rubber, received and issued in unit loads of 2000 lbs. Paltier racks enable high, safe storage of this soft material, conserve space, and simplify handling in and out of stores.

INVENTORY IS CLOSELY CONTROLLED. This issue from warehouse stock is being made on October 13, leaving one pallet load in stock. A reorder had been placed on September 15 for 20,000 lbs., for shipment during the week of October 3. The last issue from old stock was made on October 19, the same day the replenishment supply was received. This type of control and turnover keeps stocks fresh and clean. More important, it keeps inventory investment at a minimum consistent with need. Expenditures for material are made only when needed, not before.





SPECIAL TRUCKS GIVE FLEXIBILITY. Each of the four trucks does a special job efficiently, thus aiding teamwork and flexibility of operation and eliminating delays. Here a straddle-type fork truck removes a pallet load from high storage and deposits it in a lay-down area. There it will be picked up and shuttled into production by means of a pallet lift truck. Other equipment includes a truck with low boom suitable for entering overland carriers, and one of a heavy-duty high-boom type for rugged work and high stacking.



STANDARDIZATION SIMPLIFIES STORAGE. Through supplier cooperation, all cartons are now shipped in unit loads, 48″ in length, permitting safe, convenient storage on standard 48″ x 48″ pallets. This has meant a reduction in handling effort and cost in receiving, storing, and issuing cartons, plus a substantial simplification of inventory control.



RECORDS AND REPORTS ARE FEW. This material handler is completing a material requisition card by writing down the exact quantity being issued to production, at the time of issue. Use of standard units also enables him to check and write down the balance on hand after issue. This information goes directly to Purchasing on the original requisition. No materials records are kept in the receiving or warehouse department. One working form does the complete paperwork job. A by-product of the systematic control and timing of material turnover is the exceptionally clean and orderly storeroom.



UNIFORM PROCEDURES HELP IN CONTROL. Warehouse Manager Charles Madeiros is shown here with receiving clerk, taking a physical inventory. This job formerly took 85 manhours. Now it is done in 40 hours, with more accurate results. Carefully thought out procedures on methods of receiving, storing and issuing, covering the details of unit loads and pallets, types of materials and their disposition, and strict time schedules for operations, have helped bring about this notable improvement.



MISCELLANEOUS STORES ARE NEATLY KEPT. Acushnet has a large variety of purchased materials and parts that necessarily arrive in various shapes and sizes of containers. These are stored on 3-high permanent metal racks, conserving space, with aisles just wide enough for efficient operation of a straddle-type fork truck for in-and-out handling. Rack cards at the end of each aisle identify the exact location and quantity of each material item.

Low Cost Lumber from Wood Waste

By *A. Wyn Williams*

Photographs by courtesy of Chipcraft Company and Chemical Division of the Borden Company.

TEAMWORK between mechanical engineers and synthetic chemists is making available to industry a structural material with all the desirable properties of wood, but with many of its shortcomings eliminated. The product, which goes under various names—chipcore, hardboard, particle board, etc.—is made from wood waste, ground into chips and bonded with strong synthetic resins.

Low Cost Material

For the buyer, it provides a material that can be used as an alternative for lumber in most applications, at cost savings up to 40% in comparison with regular lumber stock.

For the lumber industry, it has gone far toward solving a problem as old as the industry itself. Traditionally, a maximum of only 15% of a felled tree can be processed into a useful, marketable end product. With the new process, up to 70% can now be utilized, as it makes use of slabwood, tops, branches, cutoffs, brokes, and culls, as well as planings or other waste from woodworking mills. (Sawdust and other "fines" are not desirable. The ideal mixture of chips is such that it will pass through a 6-mesh screen, but remain on a 20-mesh one. Particles of sliver or flake shape are best; they interlock to form a stronger bond and give greater dimensional stability.)

For the woodworking plant, it is also a potent means of recovering value from waste. Woodworking waste, when not thrown away altogether, has been mostly used as low cost fuel. As fuel, wood waste has a value of about $6.25 per ton; as board, this value is upgraded to about $110 per ton.

Apart from the fact that waste is the raw material out of which chipcore is made, an important contributing factor to its low cost is that the machines fabricating it are fully automated. Labor costs are negligible in relation to the high output of the machines. One type of machine turning out 12,000 square feet of board per shift is operated by one man. The material is handled by automatic processes from waste lumber to finished board.

Selection of the proper resin binder is governed by such factors as species of wood waste used, "chip geometry" (size and shape of the particles), moisture content, density and type of board desired, and end uses. For interior applications, protected from extremes of moisture, relatively inexpensive urea resin adhesives can be used satisfactorily. For exterior use, or for any application where a high degree of moisture resistance is needed, phenolic resins are generally used. This does not greatly affect the cost of the board, as the phenolics can be used in lower percentages than urea binders, thereby reducing the cost differential.

Production Processes

There are four processes for the production of wood waste board. Two are of the press type —a multi-platen stationary plate unit or a continuous belt plate. Two are of the extrusion type—vertical or horizontal.

The perfection of the extrusion type machines within the past couple of years is contributing a sensational impetus to the growth in production and use of wood waste board. These machines are very economical to operate, holding manufacturing and labor costs to a minimum. The board can be made to any desired length.

But this is not the only merit of the extrusion process. While the press type is confined to producing flat surface board, an extrusion machine can produce a finished product of almost any form, from paper rolls and belting cores to cups and saucers, shoe heels, chair legs, etc., and fluted panels up to 48″ in width, as readily as it produces a flat board. The ability to get custom made shapes, with a minimum of labor and waste material in subsequent fabrication, is another important advantage to the buyer.

All four processes use heat and pressure to form the wood waste chips, treated with the proper amount of resin (about 7½% for the urea type and 5% for phenolics), into finished board. The

amount of pressure applied is governed by the thickness required in the board. Heat up to 400°F is applied by various forms of heat exchangers, the cycle and degree varying with the properties to be imparted to the board.

Used Like Lumber

The range of uses for wood waste board is extremely diverse, and increasing daily. Typical uses include flooring, bins, partitions, lockers, bench tops, and in trailer construction both for in-plant jobs or road work. As a structural board it has several outstanding assets, such as greater strength and ease of application, due in no small measure to the large sizes in which it can be procured—up to 48″ in width, and theoretically any lengths. It also has excellent acoustical and thermo-insulating qualities.

It can be worked with the same machines and tools as are used with natural wood, with one minor reservation. The resin content tends to dull cutting edges somewhat more than natural wood. For this reason, carboloy-tipped cutters may occasionally be advisable. With this proviso, wood waste board may be subjected to the same fabricating operation as natural wood. It can be sawed, planed, sanded, and shaped with conventional woodworking machinery. It can be nailed, and holds screws well. It will take oil paints, stains, varnishes, shellac, and wax satisfactorily. It can be covered with plastic materials or impregnated papers. It can be veneered and edge glued by the same methods employed with lumber.

Superior Qualities

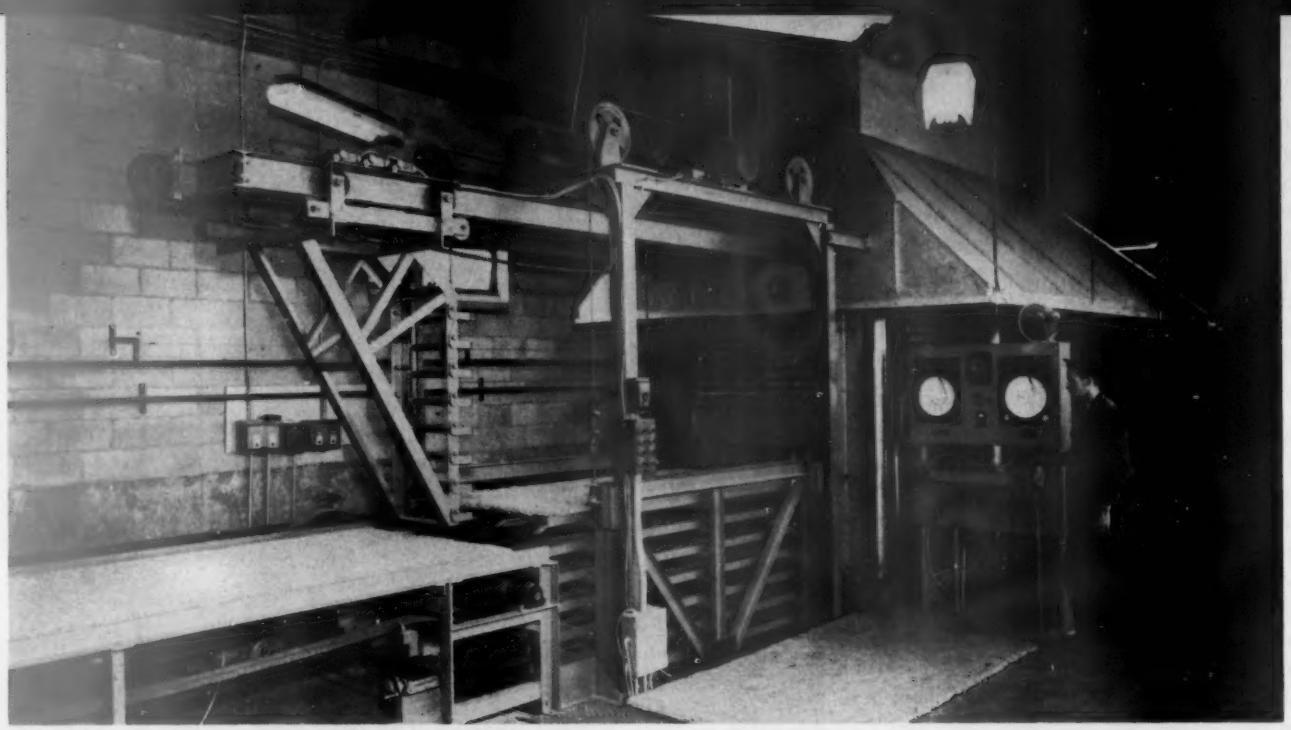
Besides the properties that it shares with natural wood, waste wood board has some properties that make it superior in many applications. Wood is particularly sensitive to changes in moisture content, and this is accentuated as the effect of moisture is different in directions parallel to or across the grain. This results in warping and dimensional instability. Wood waste board doesn't warp. By using scientifically con-



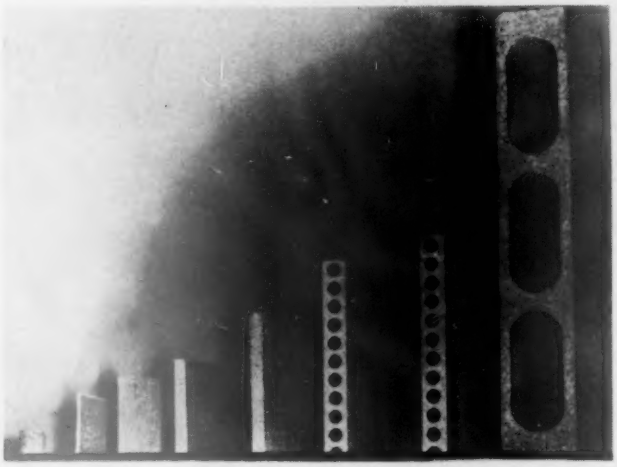
Typical installation for manufacturing wood waste board. Wood is shredded in a "hogging" machine, usually of the swing hammer type. Chips are screened to proper size, and are conveyed by suction to storage bins above the processing machines, whether of the press or extrusion types.

Control panel on a board extrusion machine illustrates the high degree of automation that has been achieved.





Press board making machine. Trays containing the ground wood with an admixture of bonding compound are loaded by conveyor into an 8-opening hot plate for curing. The curing cycle takes from 5 to 20 minutes. Only one man is required to attend to all operations, as the procedure is almost entirely automatic.





Structural advantages are combined with an unlimited variety of decorative effects through the application of plastic or veneer facings.

Versatility of the chipcore extrusion machine results in versatility of product. These representative samples of waste wood board, ranging from ⅜″ to 4″ in thickness, were all made on the same 24″ vertical machine.

trolled methods, the wood chips have been reconstituted so that the grain is no longer uni-directional and the inequalities and irregularities have been smoothed out. The bonding agents themselves are unaffected by changes in the moisture content of the surrounding air. Thus, the board is not subject to the warping vagaries of natural wood.

Also, in natural wood, the density is whatever has been imparted to it by nature, and the user is stuck with this weight in an application where a lighter weight material would be more serviceable. A wide range of densities can be achieved in wood waste board. It is possible to attain densities as low as 0.3 in fluted stock, whereas by increasing pressures and percentages of resins in processing the board, densities as high as solid wood can be achieved. Savings as much as 30% in weight can be effected in application where the lighter density board will serve the purpose.

Use Is Expanding

Wood waste board production capacity is estimated to be in the neighborhood of 2 billion board feet annually, at the end of 1955. This compares with a total lumber output of about 38.5 billion board feet. The industry predicts a rapid expansion in board output over the next few years, based upon three important factors:

1. Greater acceptance of wood waste board by lumber users, with the realization that the board is not a substitute for wood, but is wood itself, in which research has been able to separate out some of the undesirable characteristics of the natural product while retaining its desirable properties and adding superior ones.
2. Technological advances in the formulation of new resin adhesives, resulting in increased bonding efficiency and improved board properties.
3. Corresponding advances in the development of specialized board making machinery, and especially in the automation of this equipment for low cost production.



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For More Information Circle No. 210 on Inquiry Card—Page 17

Cuban Purchasing Agents Are Good Customers

An example of buyer-seller relationships at the international level, with basic factors of mutual economic advantage

By A. N. Wecksler

CUBA, our closest offshore neighbor, reflects some of the purchasing developments and practices that are symptomatic of today's conditions in world trade. With U.S. mills and suppliers of some materials booked up for many months ahead, some of our foreign competitors are offering better delivery schedules as well as lower prices. These advantages attract Cuban buyers. But the bond between the U.S. and our near neighbors makes us the natural—and preferred—source of materials and manufactures.

What Cuba and many other Latin American countries want to emphasize is that buying is not a one-way street.

As an example, the U.S. is the principal customer for the Cuban sugar crop, upon which the whole economy of the island depends. U.S. assigns a quota to Cuban sugar which gives Cuba a higher price on sugar than the world market price, but permits Cuba to market much less sugar in this country than it sent here during World War II or in the 1920s, prior to the Tariff Act of 1930.

In the balance of trade, however, the U.S. sells more to Cuba than it buys there. The balance of trade is distinctly in our favor. Even in the matter of tourist spending, Cubans spend almost twice as many tourist dollars in the United States than are spent by Americans in Cuba.

Cuba finances this trade deficit by sale of sugar to other countries. The Soviets bought large tonnages of Cuban sugar in 1955, and have already made substantial (though somewhat smaller) purchases for 1956. Payment is with American dollars. As a result, the Russians finance a substantial volume of Cuban purchases from U.S. suppliers. This is one of the few cases where we enjoy a trade triumph over the Soviets, and it is in no small part due to the Cuban P.A. that we have this advantage.

> PURCHASING's Washington Editor recently vacationed in Cuba. In the traditional manner of the "busman's holiday" he spent considerable time in talking with purchasing agents there. Here are their views on why the United States is the preferred source of supply.

Our success in Cuba is not a secret weapon. Interviews with Cuban purchasing agents on the island showed clearly that the same considerations which bind a U.S. purchaser to certain specific sources of supply likewise influence the Cuban buyer.

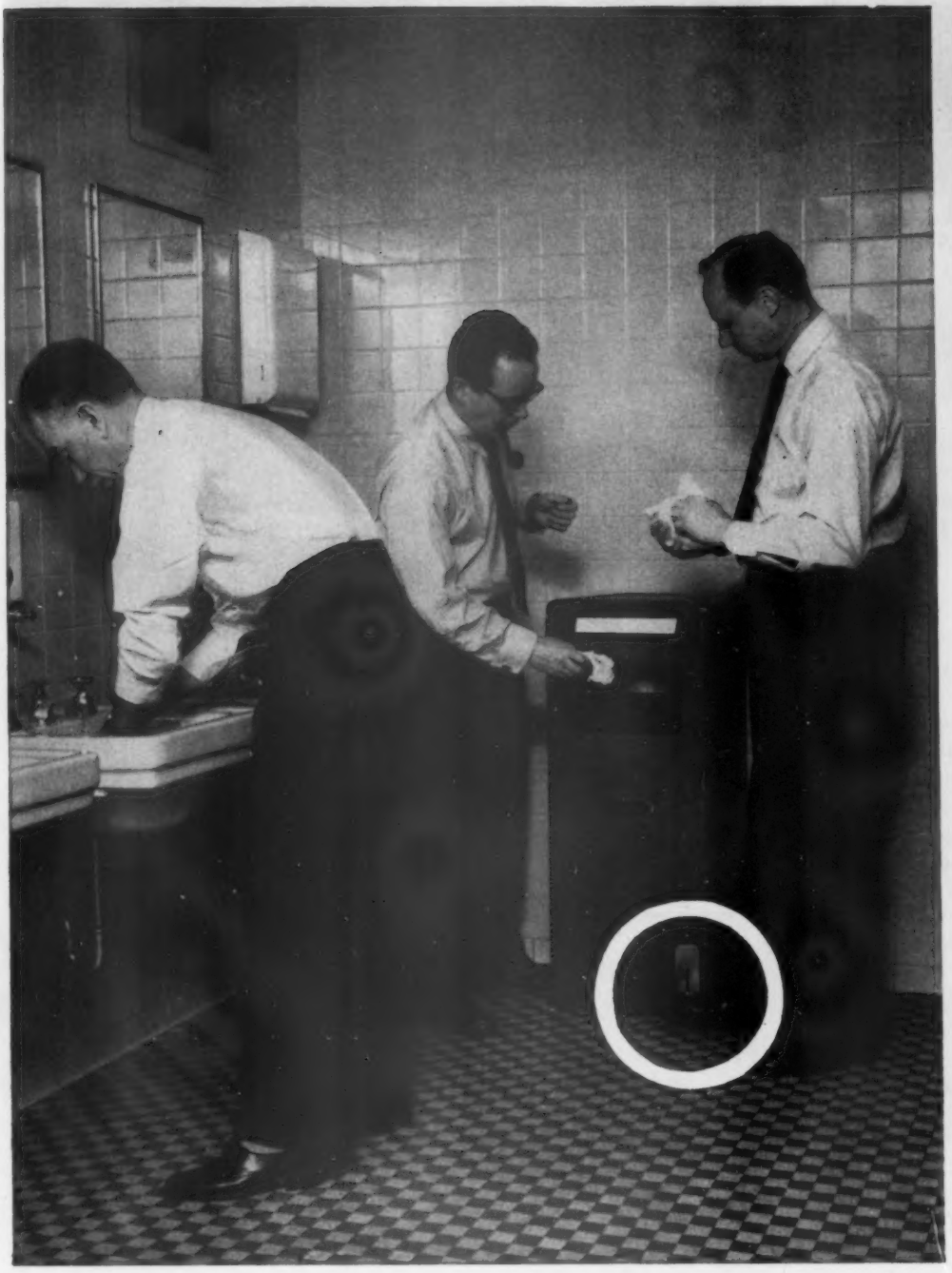
One fact that transcends all others in importance is that Cubans like Americans. They like American businessmen, and they like the way we do business. This is the sort of relationship that cannot be measured in terms of value, except that without it, it is hard to do business regardless of how attractive the merchandise or conditions of sale may be.

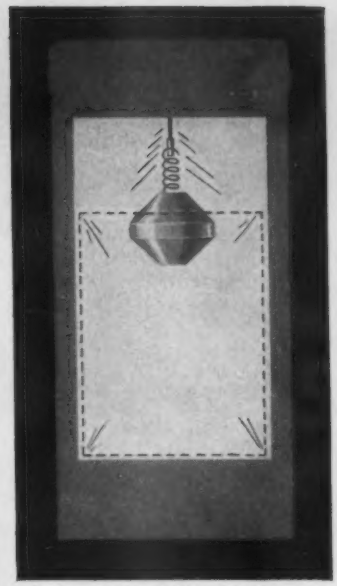
There are more practical considerations, too. In many cases the Cuban sugar interests have attracted a great deal of American capital, and some of the companies maintain purchasing offices in the U.S. for heavy equipment, while their purchasing agents in Havana buy mostly maintenance supplies and items of local supply.

With much of the heavy equipment bought in U.S., it almost automatically follows that repair and maintenance parts also come from the U.S., since no foreign supplier is in the position to offer spares and replacement parts in competition with the original equipment supplier.

A list of the products and equipment purchased by Cuba in the U.S. reads like a product listing in any standard industrial directory—from locomotives and rolling stock to baby oil. Just as Cuban sugar finds its way onto the tables of virtually every home in the U.S., so Cuba draws on practically every industrial source in this country for the variety of products it buys here.

This interdependence between the economies of the U.S. and Cuba is so clearly felt in Cuba that there is considerable wonderment there that this feeling is not completely reciprocal. Cubans read about U.S. interest in financing the multi-billion-dollar Aswan Dam in Egypt, and the large sums of aid to other countries—in some cases, to finance an





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For More Information Circle No. 211 on Inquiry Card—Page 17



Jeep-deep in Cuban cane. We buy Cuban sugar, and they buy American equipment.





The American observer sees familiar trade-marks on the equipment used in Cuba's sugar industry—McCormick and Fordson tractors, Bucyrus-Erie bulldozers, and International trucks.





increase in output of products that will ultimately be competitive with U.S. production. In the case of the Egyptian loans, for instance, the net result will be to vastly increase Egyptian cotton production, which will in turn cut sharply into the foreign markets for U.S. cotton.

Cuban sugar does compete with U.S. beet and cane production in a sense. If there were no imports from offshore islands, the U.S. mainland sugar would go sky high in price. The U.S. does not export sugar and, in fact, if there were no friendly relationship with Cuba to give us a preferred consumer position, it is questionable whether we could maintain the highly protected price which we have established to make western beet and Louisiana cane production profitable.

So the Cubans feel that they have an interest in us, and they want us to have an interest in them— to buy as much of their sugar as we can so that they in turn can maintain the large volume of purchases which they need to keep their sugar industry rolling, plus the needs of building a modern State, with modern living standards.

What happens if we take the short view and squeeze the economies of our neighbors to minimal standards? In the case of Cuba, with its one-crop sugar economy, the tonnage we buy largely determines the number of new buildings that will be built, whether new roads will be constructed, how many tractors, trucks, electrical switch-gear, transformers, etc., Cuba will buy. Also, what the wage scale in Cuba will be, providing the buying power for consumer goods. Also, how much tonnage the ports will clear, both export and import which in turn controls the amounts of revenue that will be available to the Cuban government.

If the squeeze is too severe, there is trouble and revolution. There is discontent, and resentment is turned toward Americans.

In most of the Latin American area, the Communist influence is of minor importance today. Discontent and trouble develop largely out of economic imbalance, and the U.S. is looked upon —rightly— as the economic balance wheel.

Our government policy has blown hot and cold in Latin America. Our near neighbors are sometimes in the spotlight of economic favor, but are more often neglected in our efforts to bail out Europe, as after World Wars I and II, and the Far East in the past decade.

Here are some observations by Cuban purchasing agents on their specific problems:

On **price differentials:** the prices prevailing on the island are from 20% to 50% higher than on the mainland. The 20% differential applies generally to imported raw materials. It represents the costs of freight, insurance, and handling. The higher mark-ups on manufactured goods reflect these costs plus duty.

Some of our **foreign competition** has been offering the following to Cuban purchasers:

Belgium and Britain have been selling industrial chemicals; the Germans have been offering chemicals of pharmaceutical grade.

In textiles, Belgium has been offering high quality sheeting; Britain has been selling woolens, and Ireland the traditional linen goods.

Britain, Belgium and West Germany have been selling iron and steel products, including wire, bolts and nuts, and plate, at from 20% to 25% below U.S. prices. Cuban buyers report that they prefer U.S. quality. Japan has been offering pipe (black and galvanized) and fittings, which are cheaper in price than the U.S. product, but also lower in quality.

Big attraction is the fact that the foreign suppliers offer better delivery by two or three months, though delivery time has tended to lengthen out since the middle of 1955.

These differentials in cost and service cannot be ignored. Cuban buyers, like good purchasing men everywhere, are price-conscious. However, wherever possible, they favor the U.S. as a buying source.

For More Information Circle No. 212 on Inquiry Card—Page 17→



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With a staff of process engineers, modern and complete manufacturing facilities, and skilled personnel the Ex-Cell-O organization can produce quality parts to your specifications and in quantities to meet your production schedules. Our complete, modern testing laboratory is well equipped to handle both physical and chemical tests and analyses. Facilities include:

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Within its own plants, Ex-Cell-O has developed highest efficiency in the economical use of machines and cutting tools. This applies to any job requiring either standard or special production facilities; and it's based on many years of experience as one of the world's largest manufacturers of machine tools and cutting tools.

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Price Control in the Sale of Patented Articles

Patentee's monopoly rights in respect to licensed users of his patent, including price maintenance conditions, extend to sale of the product — but not beyond

By Albert Woodruff Gray

ROTARY drill bits used in oil and gas well drilling and patented by the manufacturer, were stamped, "Property of Hughes Tool Company," and leased to users under an agreement providing, "When the original cutter teeth and/or bearings have served their useful life the user will surrender the bits to the Hughes Tool Company upon request. In accepting delivery the user agrees not to surrender any of the tools as mentioned above to other than a duly authorized representative of the manufacturer."

Some of these bits were not returned but sold elsewhere and retipped for further use. The manufacturer sued the purchasers of the bits for patent infringement and the defense was made that such a method of licensing patented equipment was a violation of the federal monopoly and anti-trust statutes.

Court Upholds Manufacturer

The Federal Court of Appeals in a decision last year upheld the right of a patentee to impose whatever conditions or restrictions it might see fit in the sale or use of its patented property except as a means of creating an illegal monopoly.

"The monopoly statutes do not impinge upon the lawful monopoly granted to a patentee, the exclusive right to manufacture, use and vend the patented device," said that court. "It does not prohibit him from inhibiting the manufacture, use or sale or restricting the manufacture, use or sale of the patented device by others.

"It does prohibit the patentee from making a contract which imposes limitations beyond his lawful patent monopoly on the right of his lessee or purchaser to use or deal in goods, wares, merchandise, supplies or other commodities of a competitor, where to do so will substantially lessen competition or tend to create a monopoly."

A similar situation was recently before the United States District Court in which suit had been brought by the Federal Government against the patentee of cellophane, charging that a license of these patents was a violation of the anti-trust laws. An exclusive license for the manufacture of cellophane had been made by the owners of this patent with another manufacturer, providing for royalty payments by the licensee on a graduated increase proportioned to the sales volume, with reciprocal licenses of other patents to the owner of the cellophane patent.

The Federal Court said in sustaining the right of a patentee to grant licenses under whatever terms or conditions it sees fit:

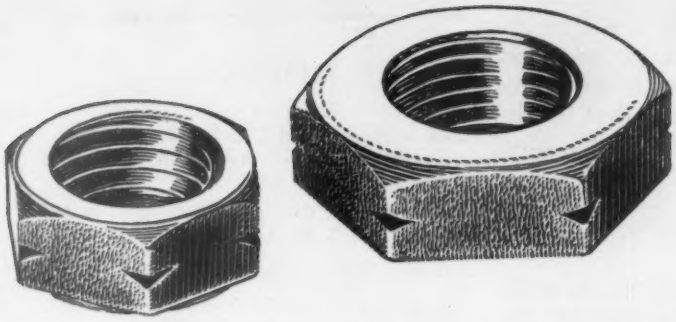
"As owner of these patents the manufacturer had the right to grant an exclusive license and such a license in no way violates the provisions of the Sherman Act. As patentee the company's right to license included the right to select or reject prospective licensees and to prefer one over others for considerations within its discretion."

Can Impose Conditions

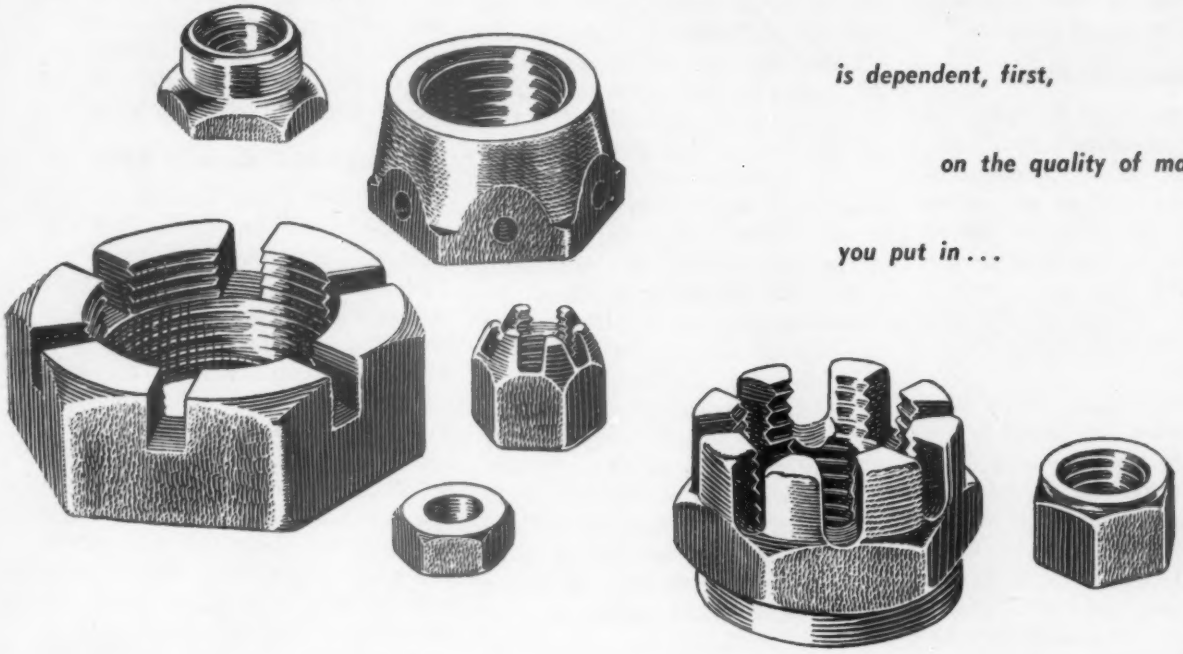
Another recent instance before this same court involved a license for the sale of electric circuit breaking devices, "multi-breakers," with the condition that the licensee's terms, prices and condition of sale should be no more favorable to purchasers than those established by the owners of the patents in its price schedules.

The licensee subsequently violated this contract and in its defense to the infringement action by the owner of the patents contended that the license agreements were in restraint of trade, illegal and void. The Federal Court in its decision said of this contention:

"We think it clear that there is nothing in the price maintenance provisions of the contracts that should deny the owner of the patents the right to protect itself against the filching of its patents by the infringer. It is well settled by a long line of decisions



the quality of product you get out of a machine –



is dependent, first,

on the quality of material

you put in . . .

The expression, "mass perfection", might well be applied to nuts of the quality illustrated above. Some are simple, others complicated. But, all bear the unmistakable mark of quality—a mark inherent in the products produced from Youngstown Cold Finished Bars.

There are no stringy chips to get caught in the cut-off blade on an automatic; they're small and break off easily. In fact, you can eliminate most grinding operations.

Youngstown Cold Finished Bars have that desirable uniformity and machineability. They are free of injurious seams. Cracked steel rarely turns up. If you use automatics, it will pay you to get in touch with your nearest Youngstown District Sales Office.

QUALITY YOUNGSTOWN SERVICE

Youngstown Cold Finished Bars

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS

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that the grantee of a patent, in licensing the manufacture and sale of the patent by others, may impose as a condition that the licensees shall not undersell him, as this is reasonably necessary to his enjoyment of the monopoly granted him under the patent statutes.

"He may not, of course, by such licensing agreements extend the monopoly of the patent to unpatented commodities nor may he use it as a price fixing device in a conspiracy to restrain and monopolize trade and commerce beyond the scope of the monopoly granted by the patent statutes."

Can Maintain Price

Then in support of its ruling in relation to a patentee's rights the court quoted from a decision of the Supreme Court in an action brought by the United States against a group of manufacturers for reciprocal licensing agreements of this character which the government claimed to be an illegal monopoly:

"The patentee may make and grant a license to another to make and use the patented articles, but withhold the right to sell them. The licensee in such a case acquires an interest in the articles made. He owns the material of them and may use them. But if he sells them he infringes the right of the patentee and may be held for damages and enjoined.

"If the patentee goes further and licenses the selling of the articles, may he limit the selling by limiting the method of sale and the price? We think he may do so provided the conditions of the sale are normal and reasonably adapted to secure the pecuniary reward for the patentee's monopoly."

Limitations on Assignee

The grounds on which the courts have sustained this right of a patentee to fix the sale price of a patented product in contravention of the anti-trust laws, is sanctioned by an old Supreme Court decision. A patent in that case had been granted a Massachusetts inventor of a coffin lid and the patentee assigned his interest in the invention to a Boston undertaker "for, to and in a circle whose radius is ten miles, having the city of Boston as a center".

Later another undertaker used this coffin lid invention in a town seventeen miles from Boston and outside this patent license circle. In the infringement suit by the assignee of this patent the infringer contended in his defense that as the coffin lid had not been used within the territory covered by this assignment any infringement was beyond the territory licensed by the original patentee.

"In the essential nature of things," said the Supreme Court in sustaining this defense, "when the patentee or the person having his rights, sells a machine or instrument whose sale value is in its use, he receives the consideration for its use and parts with the right to restrict that use. The article, in the language of the court, passes without the limit of the monopoly. That is to say that patentee or his assignee having in the act of sale received all the royalty or consideration which he claims for the use of his invention in that particular machine or instrument, it is open to the use of the purchaser without further restriction on account of the monopoly of the patentee.

"If this principle be sound as to a machine or instrument whose use may be conditioned for a number of years and may extend beyond the existence of the patent, as limited as the time of the sale, and into the period of a renewal or extension, it must be much more applicable to an instrument or product of patented manufacture which perishes in the first use of it, or which by that first use becomes incapable of further use and of no further value. Such is the case with the coffin lid of this man's patent.

"It seems to us that although the right of the assignee of the patent to manufacture, to sell and to use this coffin lid was limited to a circle of ten miles around Boston, that a purchase from him of a single coffin acquired the right to use that coffin for the purpose for which all coffins are used. That so far as the use of it was concerned the patentee had received his consideration and it was no longer within the monopoly of the patent. It would be to engraft a limitation upon the right to use not contemplated by the statute nor within the reason of the contract to say that it could only be used within a ten mile circle."

Control Ends with Sale

Here the court laid down the rule that still endures, that the patentee controls his goods so long and only so long as an article manufactured under a patent is not sold. He may control the terms and conditions of the sale of the article but after the sale he may not control the article itself.

"Whatever, therefore, may be the rule when patentees subdivide territorially their patents, as to the exclusive right *to make* or *to sell* within a limited territory, we hold that in the class of machines or implements we have described, when they are once lawfully made and sold, there is no restriction on their use to be employed for the benefit of the patentee or licensee."

When fifty years later the Federal Government sued the General Electric Company, maintaining that its system of patent licensing by the creation of agencies in the sale of its products and so controlling the prices and terms of the sales, was a violation of the anti-trust laws, the court rested the conclusion that such control of prices and sale terms was legal on that coffin lid decision of long ago. The control of the patentee, the court maintained, lies only in the right to prescribe the terms of sale and ends with the sale of the patented product.

"The license in question," said

(*Please turn to page* 344)

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Adams v. Burke, 84 U.S. 453, October, 1873.

United States v. General Electric Co., 272 U.S. 476, affirming 15 Fed. 2d 715, November 23, 1926

U.S. Laytex® ROYAL MASTER Electrical Cords



Use them yourself... Here's what you'll find.



3 times longer life...

because U. S. Laytex Royal Master has:

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U. S. Laytex® Royal Master Portable Cords are built to deliver much more than the average cord. U. S. Laytex Royal Master can take more abuse and rough handling—and still deliver *reliable* power day in and day out, month after month. Over 12,000 tests, conducted over 3 years, prove that U. S. Laytex Royal Master actually gives 3 times longer cord life than the average of other molded cords—far longer than any other cord—even surpassing a hypothetical cord incorporating the best features of all those tested.

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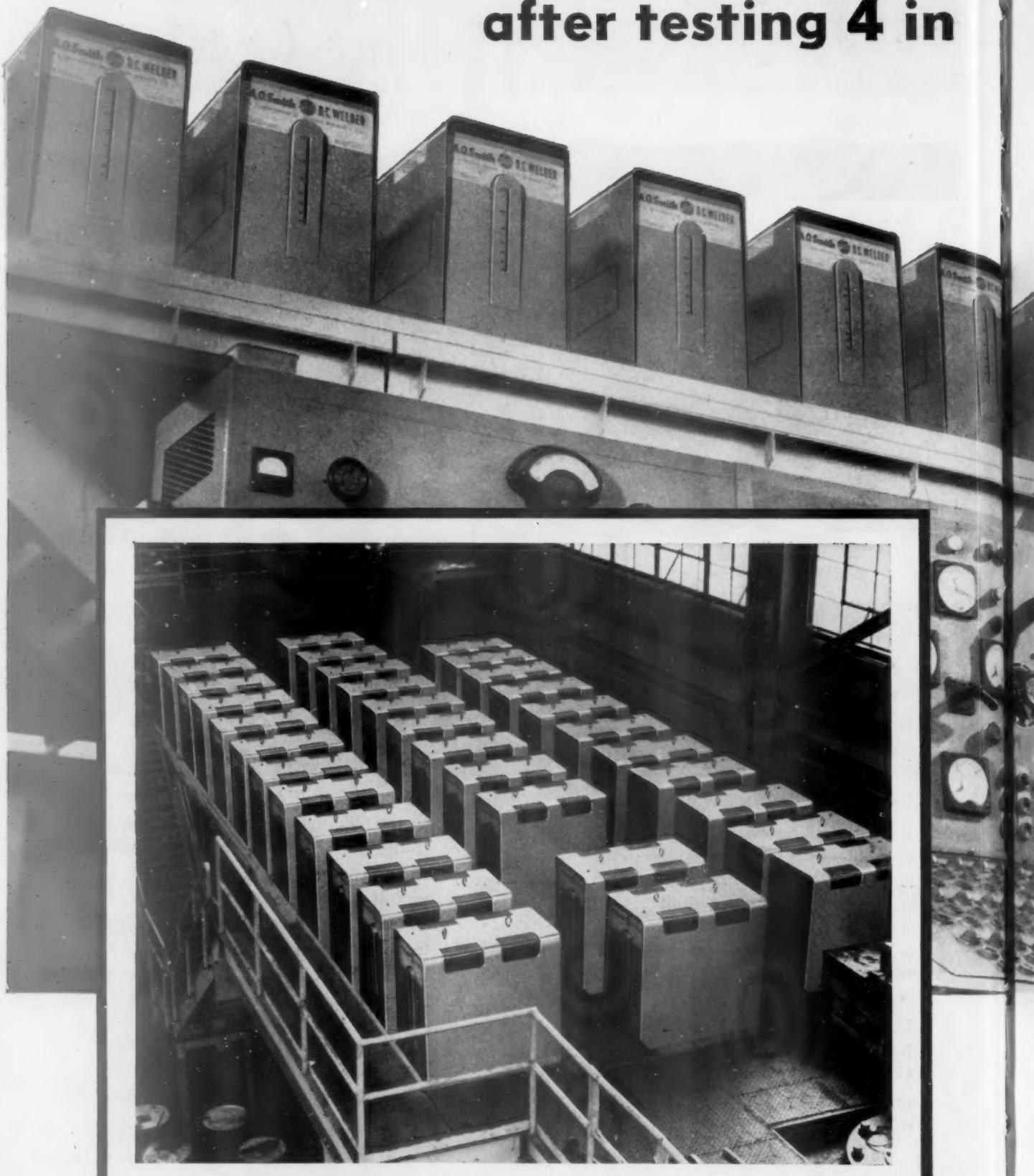
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For More Information Circle No. 214 on Inquiry Card—Page 17

Titanium producer converts after testing 4 in



A. O. Smith d-c rectifiers located above furnaces are extremely compact, clean in design — require only a fraction of the floor-space that would be used by d-c generators. High-velocity ventilation draws cool air over stacks before blasting it through machine . . . keeps temperatures below critical stage even when units are short-circuited at full-rated amperage.

to A. O. Smith d-c rectifiers

trial by torture!

Mallory-Sharon Titanium Corporation replaced d-c generators with multiple batteries of compact, space-saving A. O. Smith 1000-amp d-c rectifiers. Move resulted from tests which included frequent 'round-the-clock operation . . . sustained short circuits of 20 to 30 seconds duration at currents 88 to 100% above rating.



Rectifiers are remote controlled from central panel. Amperage control is stepless, effortless over full range. In 16 months' operation, despite rugged production schedules, Mallory-Sharon reports performance has been "entirely satisfactory." Rectifiers have no moving parts, are simple to maintain and service.

TO provide a better power source for its titanium double-melting furnaces at Niles, Ohio, Mallory-Sharon installed four A. O. Smith 1000-amp d-c rectifiers on a trial basis. The tests proved them simpler to install, lower in cost per ampere, quieter, more dependable and efficient than d-c generators. Findings were so conclusive that A. O. Smith rectifiers were ordered to replace all rotating machinery.

If you're searching for an a-c or d-c power source for welding, arc furnaces, plating, gas generation or jobs similar to Mallory-Sharon's, A. O. Smith can supply a practical, economical answer. Get the facts on how our dependable standard a-c and d-c units can be easily, inexpensively applied to your operations. See, too, how A. O. Smith's unrivalled experience in the field can save you engineering, and application expense.

Contact your "man from A. O. Smith" or write direct.



The man from A. O. Smith, in this application, is Myron A. Ockerman. He not only assisted Mallory-Sharon engineers in selection and installation of rectifiers; he also worked closely with them in choice of A. O. Smith 600-amp welders for welding titanium ingots together to form progressively larger ingots.

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MEMORIAL AUDITORIUM
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Through research A.O. Smith *. . . a better way*

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CORPORATION
WELDING PRODUCTS DIVISION
Milwaukee 1, Wisconsin
International Division: Milwaukee 1, Wisconsin

For More Information Circle No. 215 on Inquiry Card—Page 17

ideas **you can use**

New Plating Process Cuts Cost, Time

By using a new-type plating bath that deposits "Crack-Free" chromium directly on zinc die-castings, American Hardware Corporation was able to attractively finish a new line of kitchen cabinet hardware without the need of investing in additional plating equipment. Thus, no production time was lost while new equipment was installed and readied for operation. **Handling and cleaning time was sharply reduced as compared with conventional processes.**

The company manufactures a complete line of builders' hardware. When a new line was readied for production, the plating department was faced with the problem of providing a chromium finish for two sizes of zinc die-cast knobs and handles. The product line did not justify investing in new automatic plating equipment. Manual plating would make for excessive production costs because of repeated parts handling. **Direct plating of conventional chromium was rejected because of a long plating time for an adequate plate thickness and because of the difficulty in color buffing a heavy chrome deposit.**

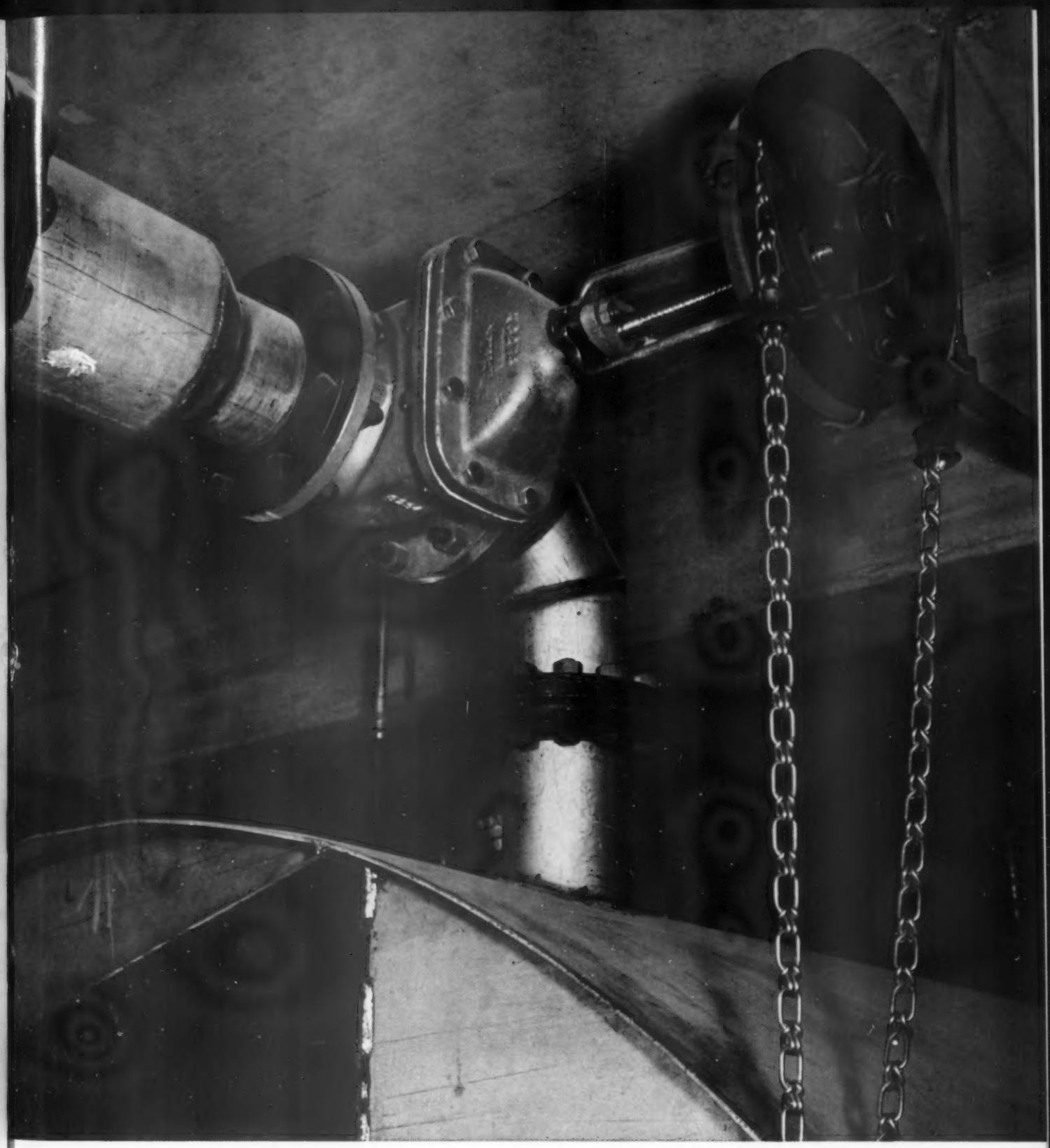
Racks of zinc die-cast handles being inserted in the CF-500 plating solution. The plating cycle is approximately 15 minutes, during which time approximately 0.3 mil of Crack-Free chromium is deposited. An average of 156 pieces are plated per cycle.



The answer proved to be a new type plating bath, Unichrome CF-500, recently introduced by the United Chromium Division of Metal & Thermit Corporation. **The process deposits a chromium plate free of the structural imperfections characteristic of conventional chromium. Since no undercoating of copper and nickel is required, the plating operation is a single-step process—avoiding excessive handling.**

At American Hardware, one man handles the plating operation. The plating tank, a 375-gallon unit, can accommodate 156 castings/cycle. It takes 15 minutes to deposit 0.2 to 0.3 mil of chromium. The operator has ample time to rack the casting prior to immer-

(Please turn to page 134)



Film censor at work

At 950-acre Kodak Park, the film-producing plant of Eastman Kodak Co. in Rochester, N. Y., they take no chances on film contamination.

For example, in the operation shown here, a red-wheeled Aloyco stainless steel valve rules out of the picture dangerous rust and iron contaminants which would spoil the thick fluid which is called "dope." These valves control the flow of dope onto roll-coating wheels, where solvents are driven off with heat. The dry film base is then readied for the final coat of emulsion.

Today thousands of industrial processes are being safeguarded by Aloyco corrosion and contaminant resistant valves. Find out why their dependable performance makes them first choice for all types of vital flow lines. Write Alloy Steel Products Co., Inc., 1301 West Elizabeth Avenue, Linden, N. J.



Subsidiary of Walworth Company



SAFE HANDLING REQUIRED

When white-hot molten steel is poured, only the finest quality products are specified to insure absolute safety. The wire rope lines that control movement of the ladle above are secured with genuine Crosby Clips. Easily recognized by the famous Red-U-Bolt, genuine Crosby Clips are drop-forged and hot-dip-galvanized for maximum wearing ability. The safest clip sold, genuine Crosby Clips are specified for safety in more plants than any other drop-forged rope fasteners. A complete range of sizes ⅛" to 3".



STRONG AS 3B CHAIN

Added safety is given to men and equipment using repaired steel chains with genuine Laughlin "Missing Links". As strong as 3B chain, Laughlin "Missing Links" are drop-forged from special forging steel, heat-treated, and matched under pressure for a perfect fit. Available in a complete range of sizes 3/16" to 1⅜" at distributors everywhere.



HANDLES 4 CHAIN SIZES

Four different clevis hook sizes can be interchanged instantly on Laughlin's new Load Binder—industry's safest and strongest. Laughlin's Load Binder with 20-inch handle takes Laughlin Clevis hook sizes ¼", 5/16", ⅜" and 7/16". The 22-inch Load Binder takes ⅜", 7/16", ½" and ⅝" sizes. Extremely strong, Laughlin Load Binders won't spread even under heavy strain because the swivel tongue swings *within* the handle-end slot, and the clevis is on the trunnion.



PERFECTLY ALIGNED

Safer performance and far greater strength are obtained with Laughlin shackles because the pin holes are drilled—assuring perfect alignment. Made of special forging steel throughout, the pins are heavier and stronger than the shackle itself to prevent shearing due to shifting or shock loads. Weldless and drop-forged, famous Laughlin "Perfectly Aligned" shackles are available in a complete range of sizes from 3/16" to 3" at distributors everywhere. For free catalogs on the complete Laughlin and Crosby lines, write the Thomas Laughlin Division, Portland, Maine, or the Crosby Division, American Hoist & Derrick Co., St. Paul 1, Minnesota.

(Advertisement)

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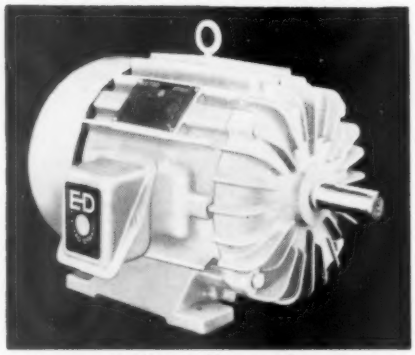
ideas

(*Continued from page* 132)

sion and to unrack the plating castings. Bath make-up maintenance is simple. The CF-500 compound is packaged as a dry mix in 100-lb. containers, and the bath is prepared by dissolving the mix in water to a predetermined solution density or specific gravity. Production control of the bath consists merely of periodic specific gravity tests with a hydrometer.

As a result of the versatility and ease of operation of the plating process, American Hardware is investigating its use for direct plating of brass and bronze that requires a dull chrome finish. Zinc die-cast luggage hardware is another product class for which the company thinks the process may be suitable on a production line basis.

Enclosed Motor For Non-Hazard Locations



A rerated totally enclosed nonventilated and totally enclosed fan cooled motor, conforming to N. E. M. A. standards, has been placed in production. It has been designed to utilize less space but with a larger hp output. The complete housing and end-brackets are constructed of solid cast iron, ribbed frame. Designated as type "H", the motor is designed for operation where non-combustible dust and moisture are prevalent. Motors are now in production on the 182, 184, 213, 215, 254U and 256U frames. The manufacturer is Electro Dynamic Div., General Dynamic Corp., Bayonne, N. J.



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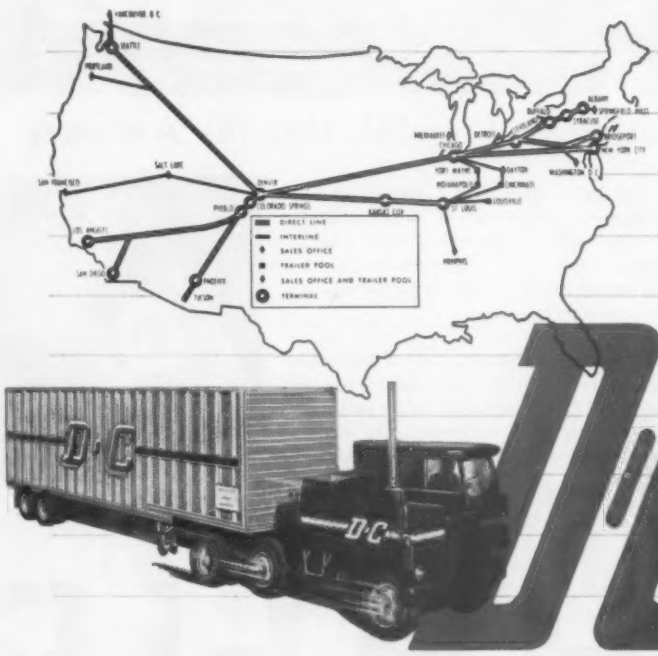
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THE ONLY COAST-TO-COAST CARRIER

Denver Chicago TRUCKING CO., INC.

For More Information Circle No. 218 on Inquiry Card—Page 17

These turboprop propeller blades

Model CT634S of the Curtiss-Wright Turbolectric series was the first U. S.-designed and built turboprop propeller to be certificated for commercial use by the Civil Aeronautics Administration. This model and others are already in quantity production for military aircraft.

Turbolectric propellers use extruded hollow steel blades produced by the controlled extrusion process developed by Curtiss-Wright. The extruded blade begins as a single-piece alloy steel billet.

With the development of this propeller and the controlled extrusion process came the need to select the right alloy steel. And here's where teamwork paid off.

Republic metallurgists, working closely with Curtiss-Wright metallurgists and engineers, selected an alloy steel with the following properties that make the extrusion process successful from both a production and cost standpoint: freedom from imperfections, uniform response to heat treatment, workability in all stages, weldability, bendability—hot or cold.

These properties in combination with the extrusion process give:

(1) IMPROVED STRENGTH-WEIGHT RATIO. The tough, integral structure of the extruded alloy steel blade provides greater strength and resistance to fatigue with minimum weight.

(2) IMPROVED QUALITY. Greater uniformity is assured by fabricating from a single homogeneous material.

(3) INCREASED PRODUCTION. The number of manufacturing operations is reduced. Production per hour is increased. Floor space is saved.

(4) REDUCED COST. Less steel for original stock, less machining, and lower cost tooling and equipment are required. Expensive welding and accompanying preheating and post-heating operations, as well as milling operations, have been reduced.

What about your product? Are you using the right steel in the right place? Republic—world's largest producer of alloy and stainless steels—offers you the services of experienced field metallurgists who will work with your staff in determining where these versatile steels can effect the greatest savings. Just send us the coupon.



Strength-to-Weight or Heat Problems—Republic Has the Answers



◀**TITANIUM SAVES WEIGHT ON DC-7** with no sacrifice in strength or safety. Republic is an old hand at this high strength-to-weight business. We pioneered the use of alloy steels, then stainless steels—followed by high strength steels. Now come Republic Titanium and Titanium Alloys. Years of experience gained in helping hundreds of manufacturers design and re-design their products to get more strength with less weight are available to you.

600° F TEMPERATURE HAS LITTLE EFFECT ON DE-ICER DUCTS made of Republic▶ ENDURO Stainless Steel. Because of its extremely high strength-to-weight ratio, and corrosion-resistance you can use ENDURO in thinner, lighter sections. It resists temperature extremes, holding its strength, toughness, and shock-resistance all the way from blistering heat through sub-zero cold. Republic produces ENDURO® in all commercial forms.

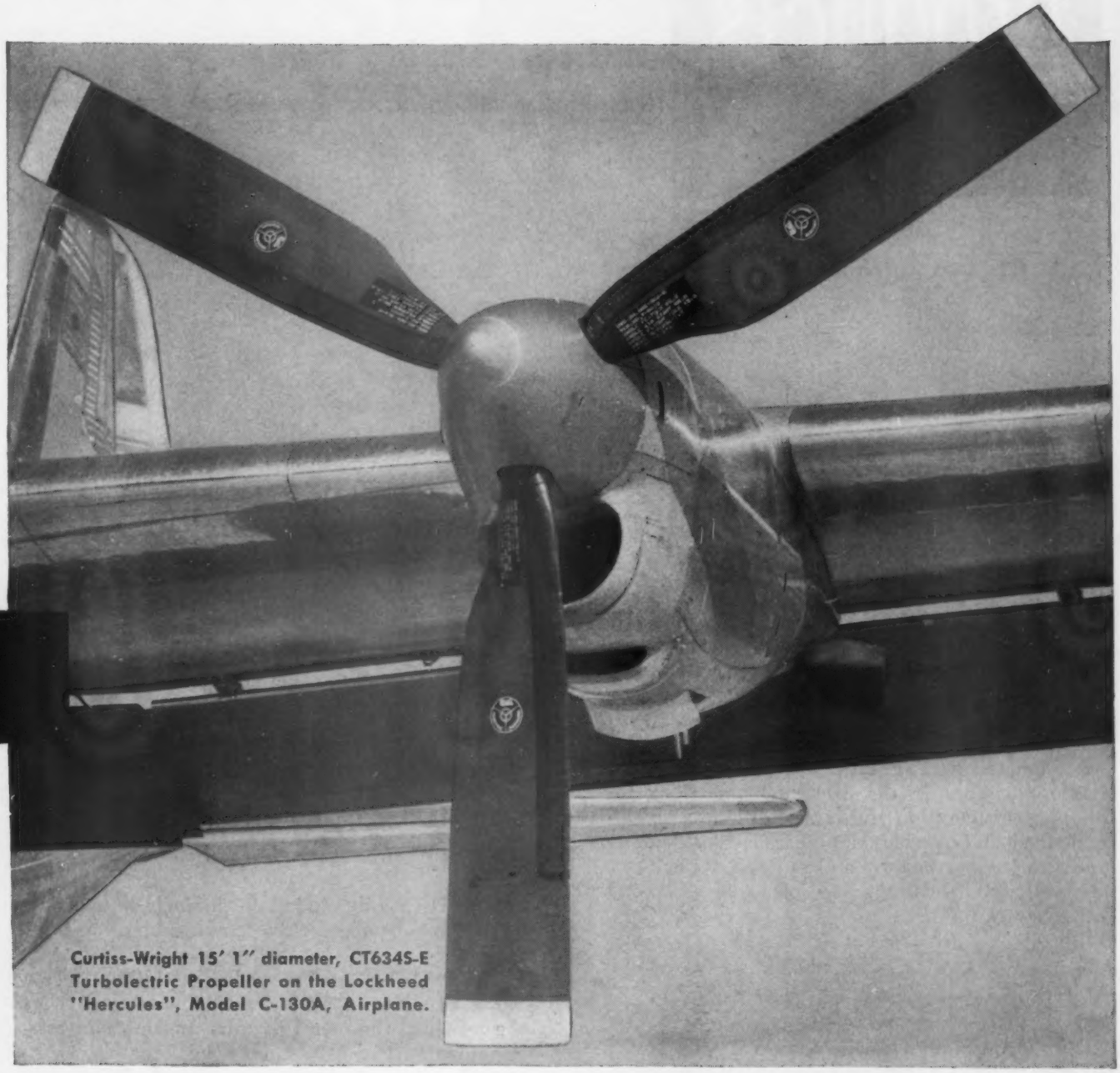


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World's Widest Range of Standard Steels

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Curtiss-Wright 15' 1" diameter, CT634S-E Turbolectric Propeller on the Lockheed "Hercules", Model C-130A, Airplane.

STEEL

and Steel Products

REPUBLIC STEEL CORPORATION
3126 East 45th Street • Cleveland 27, Ohio

Please send more information on these Republic products:
☐ Alloy Steels ☐ Titanium and Titanium Alloys
☐ ENDURO Stainless Steels

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Company_____

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City_____ Zone____ State_____

K-9661

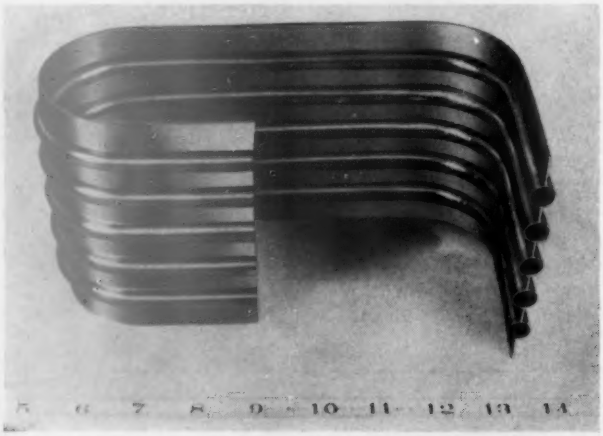
For More Information Circle No. 219 on Inquiry Card—Page 17

new products and cost-saving ideas

Tubing Made From Non-Ferrous Sheet

A new mill product in the form of a single strip, or sheet, of solid copper, brass or aluminum in which tubes are inflated to desired running lengths in a variety of shapes or sizes has been announced by Revere Copper and Brass Incorporated, New York.

Designated as Tube-In-Strip, the new product has applications in the heat exchange field, including refrigeration and air conditioning, chemical, food and petroleum processing, automobile radiators, water heaters and coolers, gas heaters, radiant panel heating, and electronics, among others.



Inflated Tube-In-Strip can be formed on multiple die hand bends after inflation using normal tube bending techniques. To conserve space, the product is shipped to customer uninflated in coils of strip or flat sheet.

The new material has expandable portions which can be inflated by the user into continuous running lengths of tube of whatever size and spacing or combinations of sizes and spacings might have originally been designed.

Except for the expandable portions, the metal is a solid strip of metal derived from a treated casting and the product does not consist of two pieces of metal brazed, welded and rolled together.

The metal can be stamped or drawn into desired shapes prior to the expansion of the channels. The expanded channels can be made circular in section, or during the expansion operation the metal can be forced into dies for the purpose of producing other than circular sections.

It is also possible to inflate channels on one side of the strip or sheet only, leaving the other surface flat.

Tube spacing can be as close as ¼" and even closer in some instances, and as widely apart as the width of the metal permits. Inside diameters of the tubes can vary from approximately 3/16" to ⅝" inclusive, when unexpanded. Tube wall gauge can vary from .0025" to whatever the inflation equipment permits.

Revere plans to ship Tube-In-Strip to the consumer uninflated, thus making possible substantial shipping economies because Tube-In-Strip will be handled just in coils or in sheets.

All tubes in a given width of strip can be inflated simultaneously or as desired, it was said. Free inflation produces a wholly round tube. A profile die, or free inflation between flat plates, holding the metal in restraint, is used for dimensions and contours other than round.

Circle No. 37 on Inquiry Card—Page 17



They may Look the same but...

American is the name!

In your actual cost of modern fasteners are four things:

1. PRICE **3. QUALITY**
2. SERVICE **4. RESEARCH**

It is possible, as prices fluctuate, there may be places you can get a price differential at the moment. But no one gives you more of all four plus features than American.

American gives you more of all four

Certainly in service, where precision American deliveries keep any production line on schedule — like an automotive manufacturer who uses more than 600 million American Phillips fasteners a year.

Certainly in quality where qualitative checks at American are unmatched in the industry in such key areas as raw material identification and evaluation.

Certainly in research that has developed not only the Phillips Head fastener, but devised a fastener for an appliance manufacturer that cut fastening costs more than 50%.

Nowhere will you find more of the four basic product features you want than from American — price, service, quality, research.

Like to know more about how this can save you important money? Then write:

American!

AMERICAN SCREW CO. • WILLIMANTIC, CONN.
NORRISTOWN, PA. • CHICAGO, ILL. • DETROIT, MICHIGAN

For More Information Circle No. 220 on Inquiry Card—Page 17

For More Information Circle No. 221 on Inquiry Card—Page 17→

With Dayton P.M.* and New

Paper Mill Saves Estimated

Downtime in Hartford City Paper Co.'s pulp beater room was costing approximately $13,000.00 yearly in maintenance and lost production time due to belt failure.

After studying the problem the local distributor salesman and Dayton field engineer suggested installing eleven Super Thorobred V-Belts on each beater drive. This recommendation was carried out and the installation has been an outstanding success from every aspect.

In the two years following, with the exception of a yearly Dayton Preventive Maintenance check-up, the beaters *never* lost production time due to V-Belt failure. And the mill operates 24 hours a day, 7 days a week.

Says Chief Engineer Floyd Cline, "Dayton Super Thorobreds have given me everything I wanted in economy,

***Preventive Maintenance**

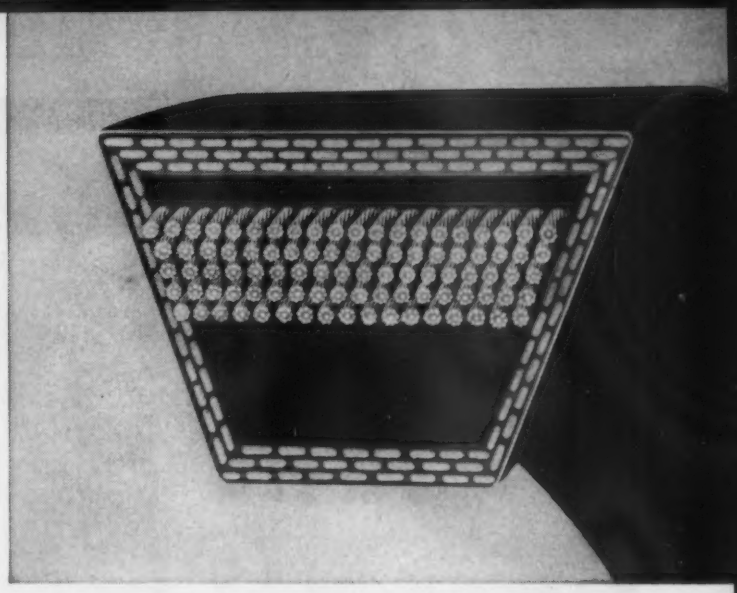


Super Thorobreds

$13,000 Yearly

reduced maintenance and increased production. And by following Dayton's P.M. program we have lengthened V-Belt life on drives throughout the mill."

Find out how Dayton P.M. and use of Dayton's complete line of quality V-Belts can reduce V-Belt costs and increase production. See your local Dayton Distributor or write Dayton Rubber Co., Industrial Div., Dayton 1, Ohio.



1. Newer, stronger cover resists cracking and abrasion, gives longer wear.

2. Super-strength cords provide 40% more H.P. than standard V-Belts.





Mr. Floyd Cline, Chief Engineer, Hartford City Paper Co., discusses the benefits his company derives from the Dayton Preventive Maintenance Program with Mr. Leon C. Molton, Dayton Sales Representative. The Dayton P.M. Program, available to all V-Belt users through local Dayton Distributors, is a method of controlled V-Belt replacement designed to lengthen service life, eliminate downtime.

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See "Belting" in the yellow pages for your local distributor



Dayton Rubber

51 YEARS OF PROGRESS

World's Largest Manufacturer of V-Belts



NATIONAL FOLDING BOX
COMPANY DIVISION
FEDERAL PAPER BOARD COMPANY, INC.

SALES OFFICES: CHRYSLER BUILDING, NEW YORK 17, N.Y.; NEW HAVEN AND VERSAILLES, CONN.; BOGOTA, N.J. BOSTON AND PALMER, MASS.; STEUBENVILLE, OHIO; PHILADELPHIA AND PITTSBURGH, PA.
FOLDING BOX PLANTS: BOGOTA, N.J.; NEW HAVEN AND VERSAILLES, CONN.; PALMER, MASS.; STEUBENVILLE, OHIO; PITTSBURGH, PA.
PAPER BOARD MILLS: BOGOTA, N.J.; NEW HAVEN, MONTVILLE AND VERSAILLES, CONN.; READING, PA.; STEUBENVILLE, O.; WHITE HALL, MD.

For More Information Circle No. 222 on Inquiry Card—Page 17

new products

Steel Cabinets With Interchangeable Parts



Borroughs Mfg. Co., 3002 N. Burdick, Kalamazoo, Mich., announces three new steel cabinet models. They are designed for storage, wardrobe and combination and are convertible with interchangeable interior parts. Each model has a single central handle, 3-point latching device and enclosed throw-bolt mechanism. All cabinets are 36″ x 78″, available in 18″ and 24″ depths. There is a choice of five colors in baked-on enamel finish—gray, dark green, brown, fall tan and spring green.

Circle No. 38 on Inquiry Card—Page 17

Lock, Eject Adjustable Adapters Resist Pull-Out

Recently placed on the market is a line of lock and eject adjustable adapters, designed for use on multiple-spindle machines doing drilling, tapping, and similar jobs. They reduce setup time up to 30%. They have high holding power and accuracy and are quickly and easily adjusted. Contributing to these qualities is an ingenious lock and eject mechanism, engineered into the tools by the manufacturers, Scully-Jones & Co., 1901 S. Rockwell St., Chicago 8, Ill. This mechanism speeds and simplifies tool changes and minimizes tool pull-out.

Circle No. 39 on Inquiry Card—Page 17



When shipments slowed down, Eddie used to run fast
To escape from the boss' volcano-like blast.



Now their shipping is handled with speed and finesse
'Cause they call on dependable ***RAILWAY EXPRESS****!*

The big difference is

Whether you're sending or receiving, whether your shipment is big or small, no matter where you ship . . . it pays to specify Railway Express. You'll find it makes the big difference in speed, economy, and safe, sure delivery. It's the complete shipping service, free enterprise at its best.

RAILWAY EXPRESS AGENCY

NOW WORLD WIDE

. . . safe, swift, sure

Railway Express will take your orders for Care

New, World Wide Service!

Save money and time on import-export shipments! The most economical, fast service by air and surface transportation, for international shipping, is now available. See your Railway Express agent for further information.


GENERAL ELECTRIC ANNOUNCES...
NEW Industrial
GENERAL ELECTRIC
DIRECT CURRENT MOTOR
RPM
VOLTS
WOUND
ERIE, PA.



Direct-current Motor

KINAMATIC* a new standard in direct-current motors, gives your machines wider speed ranges, greater output

To meet modern industrial needs for faster, more automatic, more continuous production, General Electric has designed an entirely new direct-current motor—the d-c Kinamatic.

Designed for Automation—Now, a direct-current motor has been designed for the modern job it has to do—either as individual motor drive or in regulating systems. The new General Electric d-c Kinamatic motor supplies the wide speed range and versatility required for today's manufacturing methods. It is designed for the close control of machines and split-second timing of processes essential to higher output.

Accelerated Production—The new d-c Kinamatic motor will modernize your equipment, give it increased power, higher speeds, greater output capacity. With the quick-acting G-E Kinamatic motor, your machines will process a greater variety of products . . . faster . . . easier . . . and with less maintenance and spoilage.

More Powerful—By combining advanced design with improved materials and manufacturing techniques, General Electric engineers have packed more power into the entire Kinamatic line. The powerful Kinamatic motor, with new stamina and durability, is ready to become one of your most effective weapons for keeping costs down, for meeting competition, for boosting productivity levels.

Engineering Help—Industrial specialists in 149 conveniently located General Electric Apparatus Sales Offices have the complete story on how the new d-c Kinamatic motors and generators can benefit your operation. For full details, contact your G-E Sales Representative, or write for Bulletin GEA-6355. *Direct Current Motor and Generator Department, General Electric Company, Erie, Pennsylvania.* 813-1

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Progress Is Our Most Important Product

GENERAL ELECTRIC

want better

- HEAT RESISTANCE
- ARC RESISTANCE
- STRENGTH & WEAR RESISTANCE
- STABILITY

in molded electrical parts?



Today's new Ace Hard Rubber compounds are far more than "just good insulators" in electrical-mechanical parts. Look at these representative values: Tensile strength to 10,000 psi, moisture absorption as low as 0.04%, power factor 0.006; arc resistance as high as 190; dielectric strength to 600 v/mil; surface resistance over 10^8 megohms; heat resistance to 300 deg. F. Compounds can be blended to give just the right combination of properties for each job...economically, too, because it's never necessary to "over-design." Practically any size and shape can be molded, even with complicated inserts. Machinable to close tolerances, with excellent dimensional stability. Why not check up on today's new compounds for your designs?



ACE® dielectrics:

High dielectric sheet and extruded shapes ideal for myriads of punched or machined parts.



Design hints covering wide variety of Ace hard rubber, Ace plastics, and rubber-plastic blends are available in 80-pg. Ace Handbook. Write for your copy today.



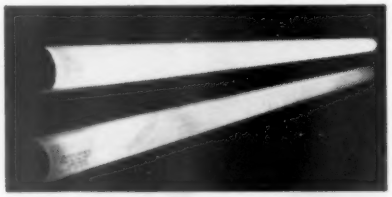
ACE rubber and plastic products

AMERICAN HARD RUBBER COMPANY
93 WORTH STREET • NEW YORK 13, N. Y.

For More Information Circle No. 225 on Inquiry Card—Page 17

new products

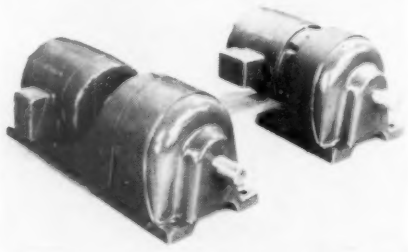
70% More Downward Fluorescent Light



A fluorescent lamp, developed by Sylvania Electric Products Inc., 1740 Broadway, New York 19, N.Y. is equipped with an internal reflector surface, resulting in 70% more downward light. An important application of the new lamp is in installations where dust or dirt are present. Significant improvements in lamp lumen-hours are obtained because the lamp is relatively unaffected by light-stealing dust and dirt on top surface of the lamp. Another result of this is a substantial reduction in lamp cleaning and maintenance costs. The lamp can be mounted bare, without external reflectors, even where ceiling provides poor reflectance.

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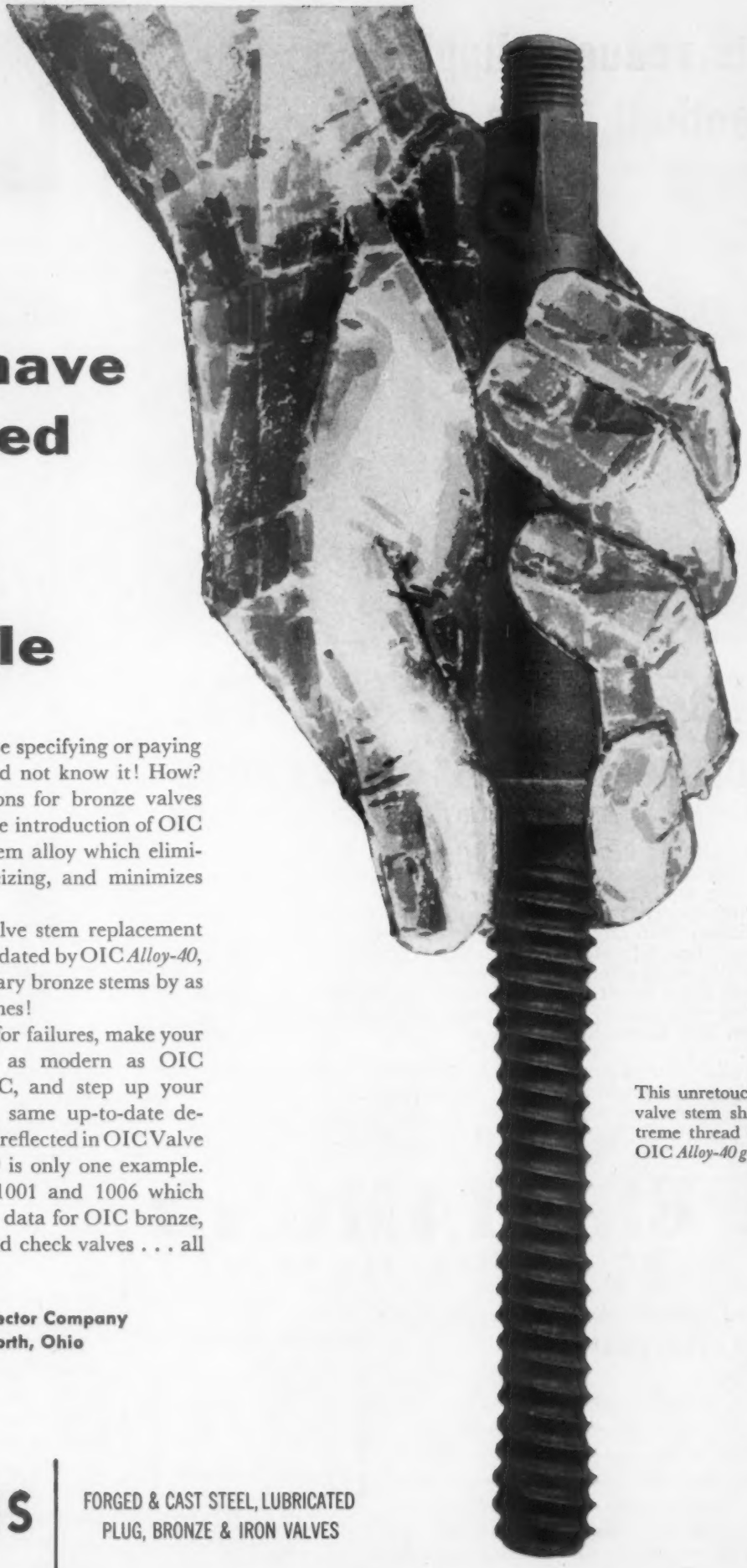
Gearmotors, Motorgears Deliver More HP Per Lb



Conforming to the new N.E.M.A. motor sizes, a line of Gearmotors and Motorgears, produced by Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill., is said to deliver more horsepower per pound on basis of size. Compactness has been achieved through a unique arrangement of hardened gears. Ratio changes are simpli-

(*Please turn to page* 148)

You may have ordered this valve trouble



This unretouched bronze valve stem shows the extreme thread wear which OIC *Alloy-40 greatly reduces.*

You may even now be specifying or paying for wear like this and not know it! How? By using specifications for bronze valves dated earlier than the introduction of OIC *Alloy-40*, a bronze stem alloy which eliminates galling and seizing, and minimizes thread wear.

In fact, bronze valve stem replacement has been virtually outdated by OIC *Alloy-40*, which outlasts ordinary bronze stems by as much as 10 to 15 times!

Instead of paying for failures, make your valve specifications as modern as OIC Valves. Include OIC, and step up your requirements to the same up-to-date design and high quality reflected in OIC Valve engineering. *Alloy-40* is only one example.

Write for forms 1001 and 1006 which contain specification data for OIC bronze, gate, globe, angle and check valves . . . all with *Alloy-40* stems.

The Ohio Injector Company
Wadsworth, Ohio

OIC VALVES

FORGED & CAST STEEL, LUBRICATED PLUG, BRONZE & IRON VALVES

For More Information Circle No. 226 on Inquiry Card—Page 17

Cleats reduce slipping on football fields, but–





WALK and WORK SAFELY

on low-cost A.W. SUPER-DIAMOND

ECONOMY ROLLED STEEL FLOOR PLATE

Forty raised steel figures to the step are your assurance of foot safety. Secrets of SUPER-DIAMOND's anti-slip protection for men and rolling equipment are the diamond design and alternate spacing of figures at right angles and correct distances for maximum friction from any angle of approach. After years of usage, the diamond pattern still retains its safe, comfortable footing . . . still permits quick cleaning and draining.

Made from tough steel floor plate, SUPER-DIAMOND can be fabricated with normal shop equipment. There are no matching problems. Use it structurally, as an overlay or as a complete flooring.

No other floor plate can match A.W. SUPER-DIAMOND's *safety, durability and easy maintenance at so low a cost.*

A.W. SUPER-DIAMOND

ROLLED STEEL FLOOR PLATE

"The diamond in the rough . . . a gem of a flooring."

ALAN WOOD STEEL COMPANY
Conshohocken, Pa.

Please send A.W. SUPER-DIAMOND Booklet SD–12

Name_____

Title_____

Company_____

Address_____

City_____ Zone_____ State_____

Other products: A.W. ALGRIP Abrasive Rolled Steel Floor Plate—Plates—Sheets —Strip—(Alloy and Special Grades)

For plants where oil, water and grease raise special problems of slipping accidents, we suggest a check on the special qualities of A.W. ALGRIP . . . the world's only abrasive rolled steel flooring.

For More Information Circle No. 227 on Inquiry Card—Page 17

new products

(*Continued from page* 146)

fied through the use of only one low-speed gear set per drive size. The Gearmotors and Motorgears are rated according to A.G.M.A. standards. The Gearmotors range up to 30 hp; the Motorgears up to 60 hp. Output speeds range from 280 rpm to 6 rpm.

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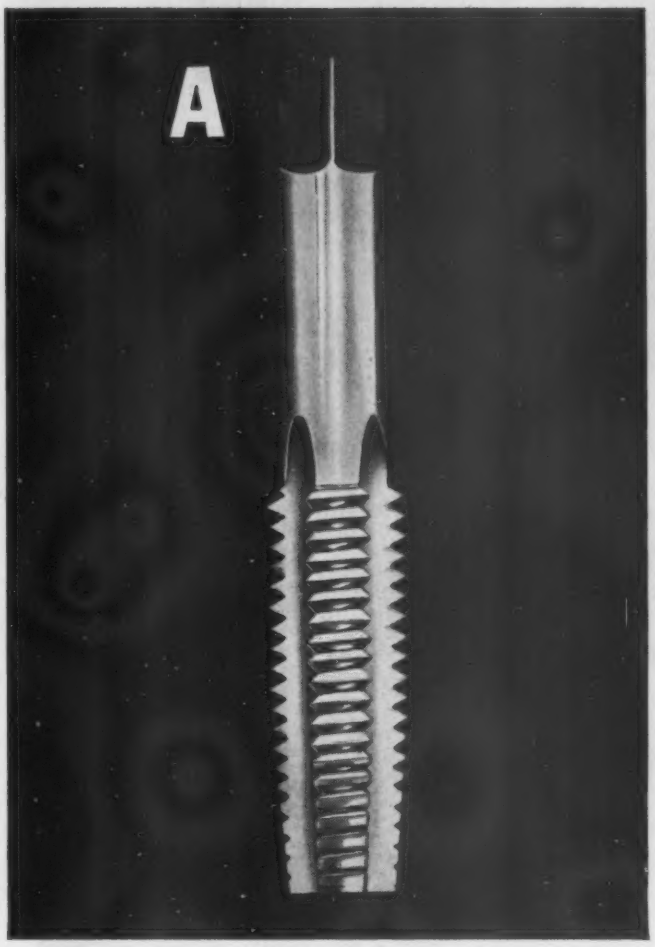
Better Welds With Fewer Rejects

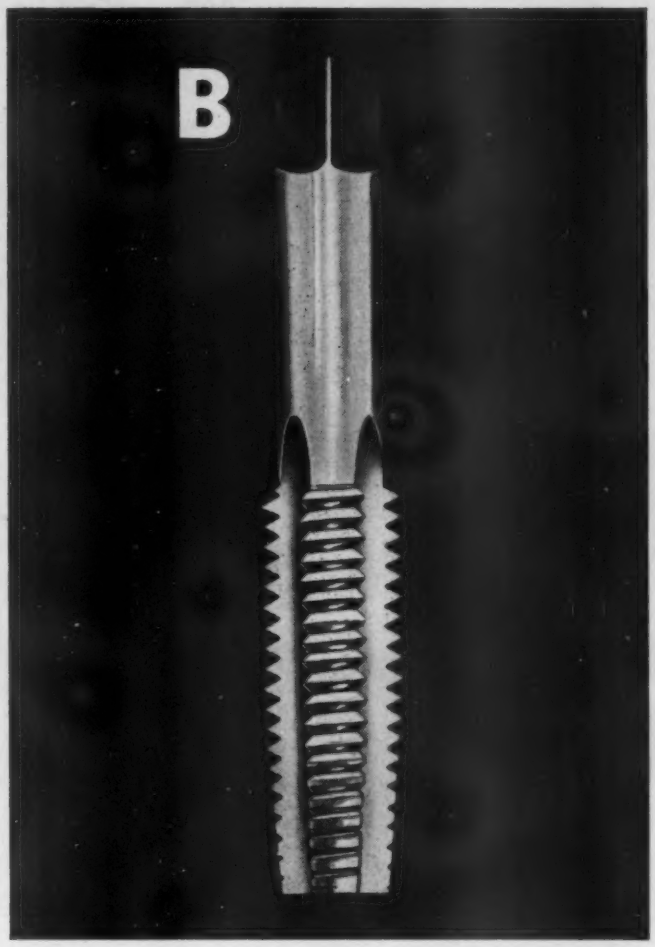


A line of 500, 750, and 1200-amp, constant-voltage welders is designed to allow the operator to select the arc voltage he desires. This voltage then remains constant during the entire welding cycle. All the operator needs do is to set the correct rod feed and travel rate to get the desired deposit rate. The constant voltage feature insures that the deposit rate is uniform; arc voltage, rod speed and travel rate all remain constant. Weld quality is enhanced because starting and recovery are instantaneous, even where tack welds and areas of poor fit-up are encountered. It is claimed that these units achieve an efficiency of 85% or better. Additional information can be obtained from the Harnischfeger Corporation, Milwaukee 46, Wis.

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WHICH OF THESE TAPS COULD NEVER GET PAST HY-PRO'S ELECTRONIC ANALYZER?





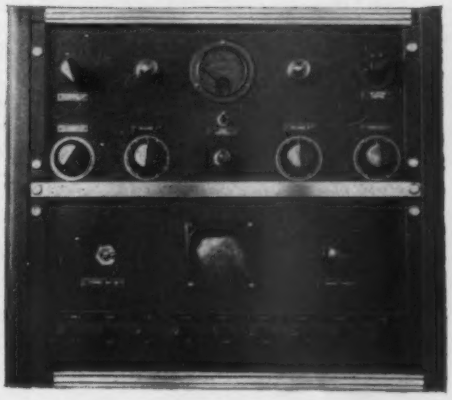
The serious defect in Tap B is invisible. But Hy-Pro's Electronic Analyzer detects all structural flaws for your protection.

HY-PRO's amazing new Electronic Analyzer is one of the three important steps which Hy-Pro takes to insure you of *3-way Quality Control*. These three steps are the Electronic Analyzer, advanced Heat Treating and the Micro-Hardness Tester.

Here's how the Electronic Analyzer works. A standard tap, perfect in every detail, is put in one side of the machine. The tap to be tested is put in the other side. Electronic impulses are shot through both taps and every inch of each tap is tested as to composition, surface condition and internal structure.

The Hy-Pro Electronic Analyzer reveals every defect, including those that laboratory, production tapping and destructive tests fail to uncover!

The best part of the Hy-Pro story is that you get the benefit of these new Hy-Pro developments at no extra cost to you. Get in touch with your nearest Hy-Pro distributor or call us direct. Hy-Pro *quality-controlled* taps—products of the Tap Specialists—cost no more than ordinary taps.



REG. U.S. PAT. OFF.

HY-PRO

"The Tap Specialists"

New Bedford, Massachusetts, U. S. A.

ADDITIONAL WAREHOUSES:

10428 W. McNICHOLS RD.
DETROIT 21, MICH.
UNIVERSITY 4-1077

1132 LAWLER ST. (WORTH)
CHICAGO, ILL.
GARDEN 4-0217

109 EDISON PL.
NEWARK 5, N. J.
MARKET 2-4319

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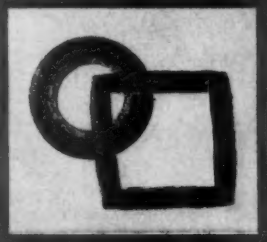
Engineers have taken to KNITTING with ALLOY WIRE...



Look at the results they're getting...



VIBRATION ABSORBING CUSHIONS



ELECTRONIC SHIELDING



FILTERS & MIST ELIMINATORS

If you haven't started to investigate the design potential for knitted stainless steel and nickel alloy wire, now is the time to do it. Here are some interesting applications to whet your interest and imagination:

1. **VIBRATION & SHOCK ABSORBING CUSHIONS**—used to protect intricate, expensive electronic equipment in aircraft. Alloy wire is unaffected by high temperatures, low temperatures, moisture and other elements.
2. **ELECTRONIC SHIELDING**—knitted alloy wire gaskets eliminate radio interference in electronic equipment. Nickel alloy wire has good conductivity, corrosion resistance and resiliency.
3. **FILTERS & MIST ELIMINATORS**—knitted wire pads remove entrained liquids from gas streams with exceptionally low pressure drop. Shaped cartridges widely used for oil and other liquid filters.

Many other industrial applications take advantage of the outstanding properties of knitted alloy wire. Learn more about these interesting products . . . send today for Application Bulletin A-1.

ALLOY

ALLOY METAL WIRE DIVISION

HKP

H. K. PORTER COMPANY, INC.
Prospect Park, Pennsylvania

For More Information Circle No. 229 on Inquiry Card—Page 17

new products

Yarn for Magnet Wire

Manufacture of glass-Dacron yarn, an abrasive-resistant insulation which adheres readily to copper, is announced by L.O.F. Glass Fibers Company, 1810 Madison Ave., Toledo, O.

S. W. Schulmeyer, manager of electrical sales for L.O.F. Glass Fibers, says the combination yarn offers many advantages to manufacturers. In addition to its long life and abrasion-resistant qualities, it has the advantage of being able to withstand considerable abuse encountered in processes of manufacturing motors, generators and transformers.

Circle No. 43 on Inquiry Card—Page 17

Portable Welder Hardfaces Odd-Shaped Parts



A portable welding machine, mounted on large casters and displacing no more space than an average floor model television set, plugs into conventional a-c or d-c welding units by a single cable. The unit has been specifically designed for manganese steel and hardfacing work on irregularly shaped parts. A unique feature is the self-feeding mechanism for keeping the welding arc constantly supplied with welding wire at a rate proportional to size of the arc. The manufacturer is the Amsco Div., American Brake & Shoe Co., 230 Park Ave., New York, N. Y.

Circle No. 44 on Inquiry Card—Page 17



TO THE FASTENER BUYER:

Lamson & Sessions has manufactured Aluminum fasteners for the aircraft industry for many years. Therefore their experience with aluminum goes back a long ways. Now, however, Lamson has added to its aluminum line standard fasteners from stock.

- **FAST DELIVERY**
- **COMPETITIVELY PRICED**
- **FULL RANGE OF TYPES & SIZES**

Here's good news for users of aluminum fasteners.

Lamson & Sessions has now added "standard" bolts, nuts, screws and cotters of aluminum alloy to its famous full line of fasteners.

Henceforth the products illustrated above will be readily available. They come in a wide range of standard sizes, including machine screws down to No. 6 diameter by ¼" in length.

This means that users of aluminum bolts and nuts can now buy at competitive prices with the added advantages of fast delivery and service.

From now on it will pay you to insist on Lamson & Sessions aluminum fasteners—made by one of the world's largest fastener manufacturers.

Lamson & Sessions

THE LAMSON & SESSIONS CO.

1971 WEST 85th STREET • CLEVELAND 2, OHIO

Plants at: Cleveland and Kent, Ohio • Birmingham • Chicago

LAMSON'S FASTENER EXPERIENCE IS NOW *YOURS* IN ALUMINUM

For More Information Circle No. 230 on Inquiry Card—Page 17



For More Information Circle No. 231 on Inquiry Card—Page 17

new products

First Aid Treatment For Any Type Burn

E. D. Bullard Co., 275 Eighth St., San Francisco, Calif., has developed a product, "F.O.B.," for the complete first aid treatment of painful burns, whether caused by fire, electricity, scalding or sun. It is non-toxic and non-irritating. It contains no harmful drugs, such as acids, alcohol or benzocaine. Application of the product by means of the aerosol spray is painless and sanitary. It is only necessary to touch the button on the top of the container and the first aid treatment is completed. It has both an anesthetic and an antiseptic quality.

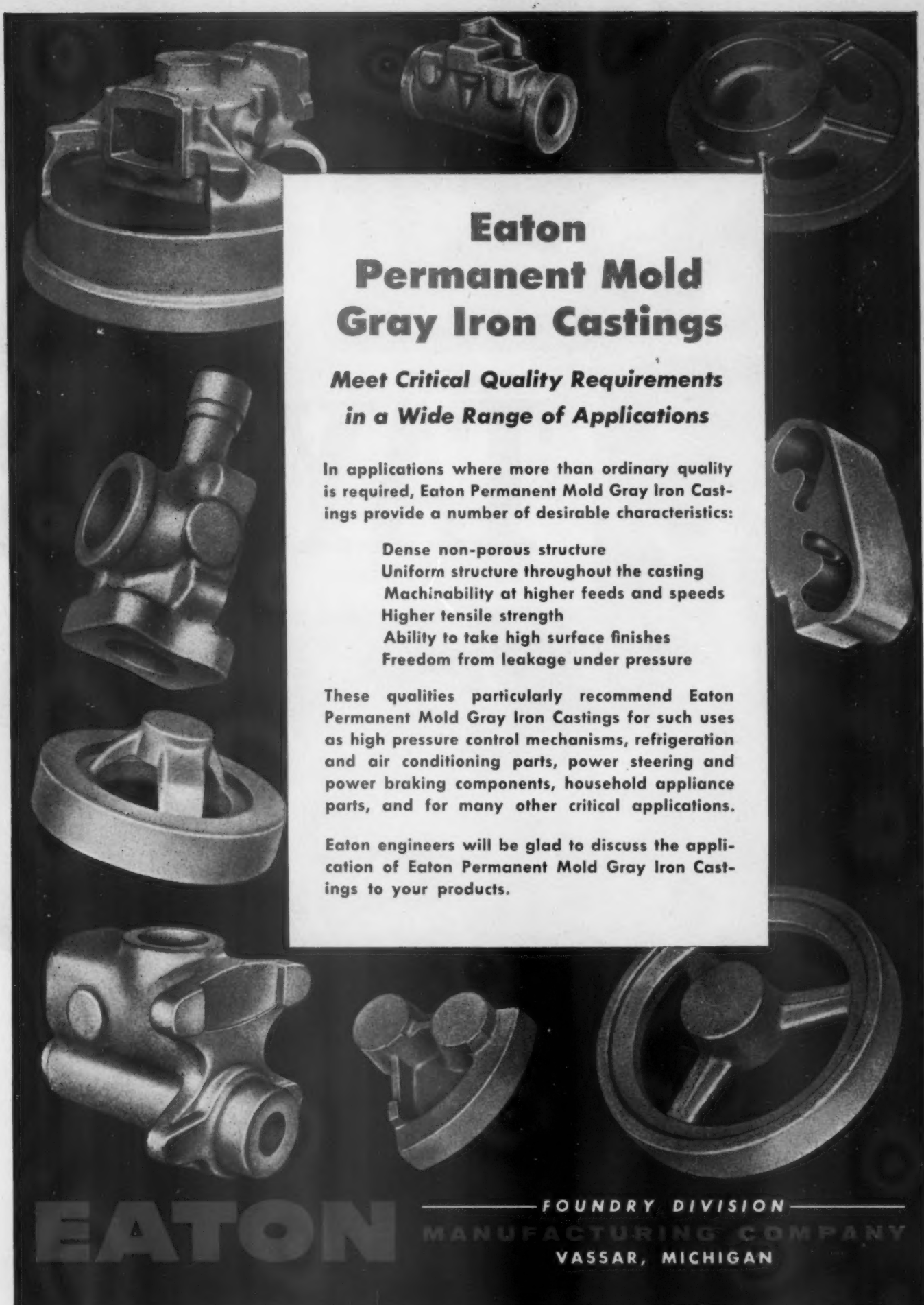
Circle No. 45 on Inquiry Card—Page 17

Retractable Curtain Protects Workers From Drafts



To protect workers from cold air currents every time doors are open, a retractable curtain, called Transwall, is available. Built of a heavy coated fabric, it installs easily on a single overhead track. Nylon rollers permit instant retractability. Thus doorways can be shielded during cold weather, yet the curtain slides readily out of the way for free use of floor space. It is available in custom sizes to suit individual needs from Bemis Bros. Bag Co., 612 S. 4th St., Minneapolis 15. Minn.

Circle No. 46 on Inquiry Card—Page 17



Eaton Permanent Mold Gray Iron Castings

Meet Critical Quality Requirements in a Wide Range of Applications

In applications where more than ordinary quality is required, Eaton Permanent Mold Gray Iron Castings provide a number of desirable characteristics:

Dense non-porous structure
Uniform structure throughout the casting
Machinability at higher feeds and speeds
Higher tensile strength
Ability to take high surface finishes
Freedom from leakage under pressure

These qualities particularly recommend Eaton Permanent Mold Gray Iron Castings for such uses as high pressure control mechanisms, refrigeration and air conditioning parts, power steering and power braking components, household appliance parts, and for many other critical applications.

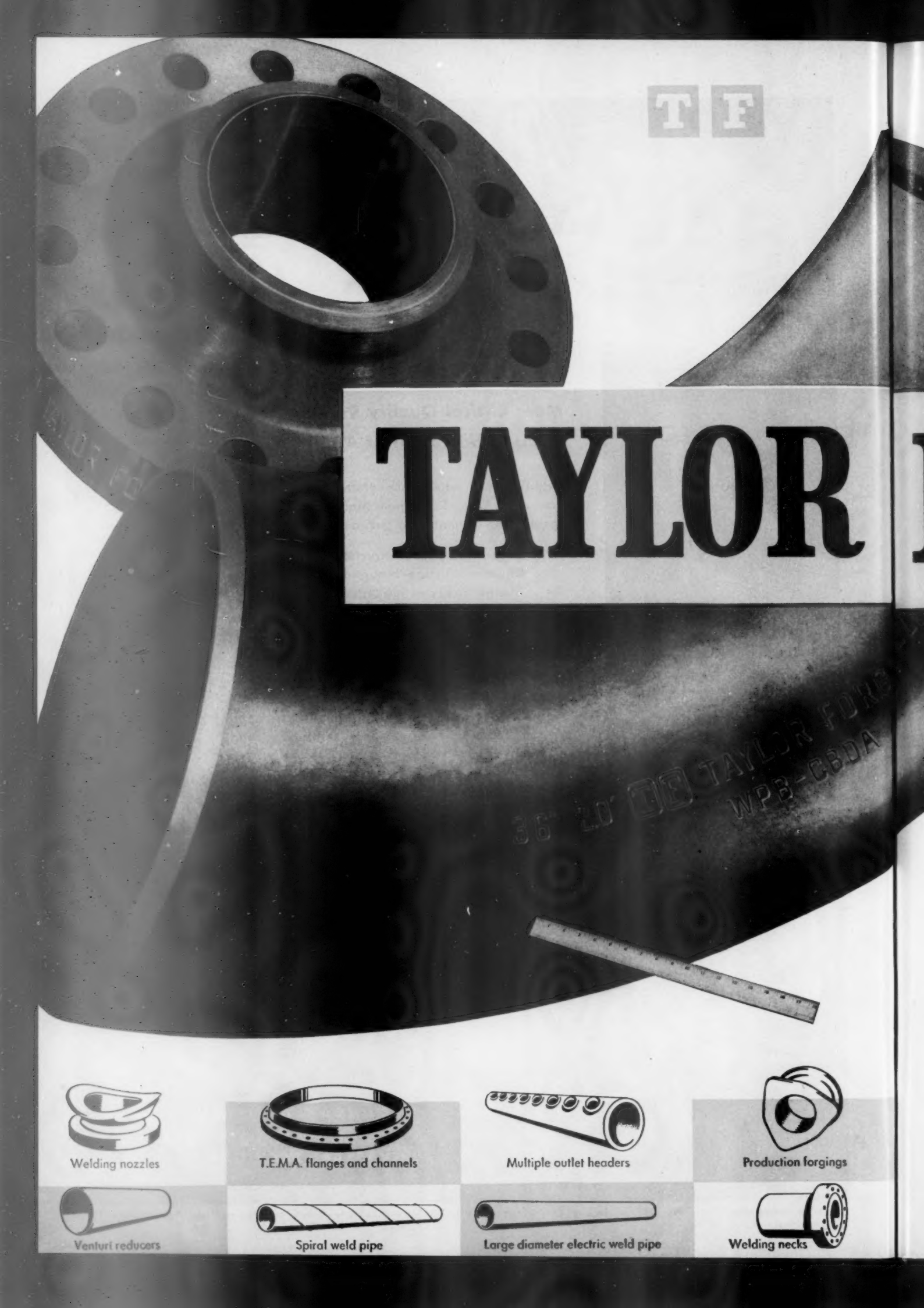
Eaton engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your products.

EATON

FOUNDRY DIVISION
MANUFACTURING COMPANY
VASSAR, MICHIGAN

For More Information Circle No. 232 on Inquiry Card—Page 17

For More Information Circle No. 233 on Inquiry Card—Page 17→



Welding nozzles

T.E.M.A. flanges and channels

Multiple outlet headers

Production forgings

Venturi reducers

Spiral weld pipe

Large diameter electric weld pipe

Welding necks



For Utmost Safety...
Complete Satisfaction...
Unexcelled Service...

FORGE

Welding Fittings and Forged Flanges

* Extra quality

* Extra strength * Dimensional accuracy

* Consistent uniformity * Controlled grain flow

* Meet all American Codes and Standards

* Available for prompt delivery in every type, size, thickness, pressure rating and material.

To be sure... turn to Taylor Forge... **TRADITIONALLY DEPENDABLE**

Taylor Forge & Pipe Works

General Offices and Works: P. O. Box 485, Chicago 90, Illinois

Plants at: Carnegie, Pa.; Gary, Ind.; Houston, Texas; Fontana, Calif.; Hamilton, Ont., Canada.

District Sales Offices: New York, Philadelphia, Pittsburgh, Atlanta, Chicago, Houston, Tulsa, Los Angeles, San Francisco, Toronto, Calgary.

CALL YOUR NEARBY TAYLOR FORGE DISTRIBUTOR

He carries a full stock of Taylor Forge Welding Fittings and Forged Flanges and can supply your needs promptly. He's a good man to know for he understands piping and through him you have available the services of Taylor Forge engineers for help and advice on any piping problems.

DELIVERS THE GOODS

On-to-Sta

...ATLANTIC

On-to-Sta Sealing Tape Wraps Up Your Packages Securely, Efficiently, Economically.

- Applies Speedily
- Grips Tightly
- Sticks Permanently



GUMMED SEALING TAPES & GUMMED SPECIALTIES

For Every Sealing Need

★

Dress Up Your Packages With Colorful Eye and Sales Appeal

ADVERTISING TAPE

Another On-to-Sta Product

Printed in 4 Colors on Gummed Kraft Paper. Seals Securely and Bears Your Firm Name, Trade Mark, or Advertising Message Wherever Your Parcels go.

★

See Your local jobber or contact us directly

ATLANTIC

GUMMED PAPER CORPORATION

PRINTED TAPE DIVISION

1 MAIN STREET • BROOKLYN 1, N. Y.

BRANCH OFFICES: PHILADELPHIA • PITTSBURGH CHICAGO • BUFFALO • BOSTON • HAVANA

For More Information Circle No. 234 on Inquiry Card—Page 17

new products

Weld Cleaning Brush

Air Reduction Sales Company 60 E. 42nd St., New York, N. Y., announces the availability of a new stainless steel wire scratch brush for cleaning stainless weld beads. This brush will eliminate the possibility of oxidation of the stainless parent metal caused by using standard steel scratch brushes.

Circle No. 47 on Inquiry Card—Page 17

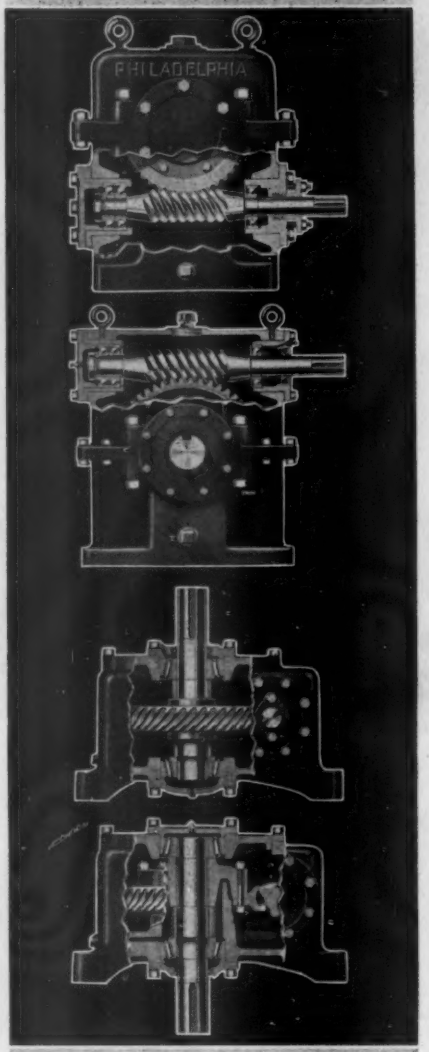
Hole Saws for Fast Metal Cutting



Used in portable air and electric drills, drill presses, lathe tailstocks, etc., a line of high speed steel hole saws, made by The Henry G. Thompson & Son Co., New Haven, Conn., cuts clean round holes in most machinable metals or other materials. Welded edge blade construction is used and is claimed to provide unusually hard, sharp, fast-cutting, long wearing teeth combined with a tough resilient back. The result is a shatterproof blade that takes the roughest use in stride. All hole saws are furnished with 6 teeth per inch and cutting depth of 1-1/8".

Circle No. 48 on Inquiry Card—Page 17

WORM GEAR REDUCERS



..a type and size for any requirement

Single and Double Reductions are available in Horizontal Right Angle type with output shaft either above or below the worm shaft. These units may be had for vertical drives with output shaft extended either up or down. Reduction ratios range from 7½ to 60:1 and in horsepowers from .081 to 262.89.

Philadelphia Worm Gear Reducers are built to provide efficient and dependable power transmission under the most rigorous and severe conditions.

For detailed information write for Catalog WG-51.

PHILADELPHIA GEAR WORKS INCORPORATED

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.

NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA BALTIMORE • CLEVELAND

Virginia Gear & Machine Corp., Lynchburg, Va.

Industrial Gears & Speed Reducers • LimiTorque Valve Controls

Established 1897

For More Information Circle No. 235 on Inquiry Card—Page 17

all Borroughs *flexi*

BOOKCASES and STORAGE UNITS

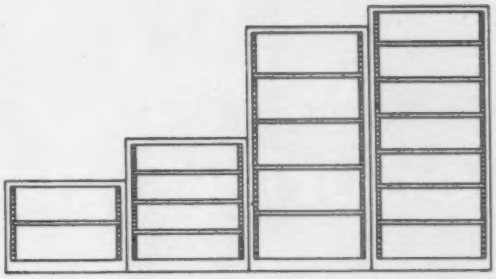
have an extra feature... * sliding shelves

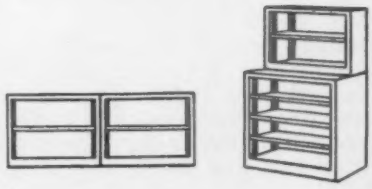
Units available in 4 heights—29", 42", 78", 84"—depths of 12" and 18"—outside width 38¼". Your choice of 5 colors. All units, except 29", are obtainable with closed or open backs, single or double-faced.





*** all Borroughs sliding shelves adjustable without bolting**





Look at the sketches above . . see how versatile these cabinets are. You can put a 29" x 12" cabinet on top of a 42" x 18" cabinet . . or you can place two 29" cabinets side by side. Regardless of the combination, you create a good looking piece of office furniture.

Are you in the market for metal bookcases or storage cabinets? If so, be sure to see the Borroughs line at your dealer's. See cabinets so handsome and so practical that they are used in the home as well as the office. All models are available in 5 modern colors—gray, spring green, dark green, fall tan and brown. You must examine them to really appreciate their excellence. You will like the quick and easy adjustability of Borroughs sliding shelves. You simply adjust the shelves to suit your needs. No bolts, nuts or tools are needed—just your hands. Yes, we believe you will be better satisfied if you always buy Borroughs products.

send for catalog

BORROUGHS MANUFACTURING COMPANY

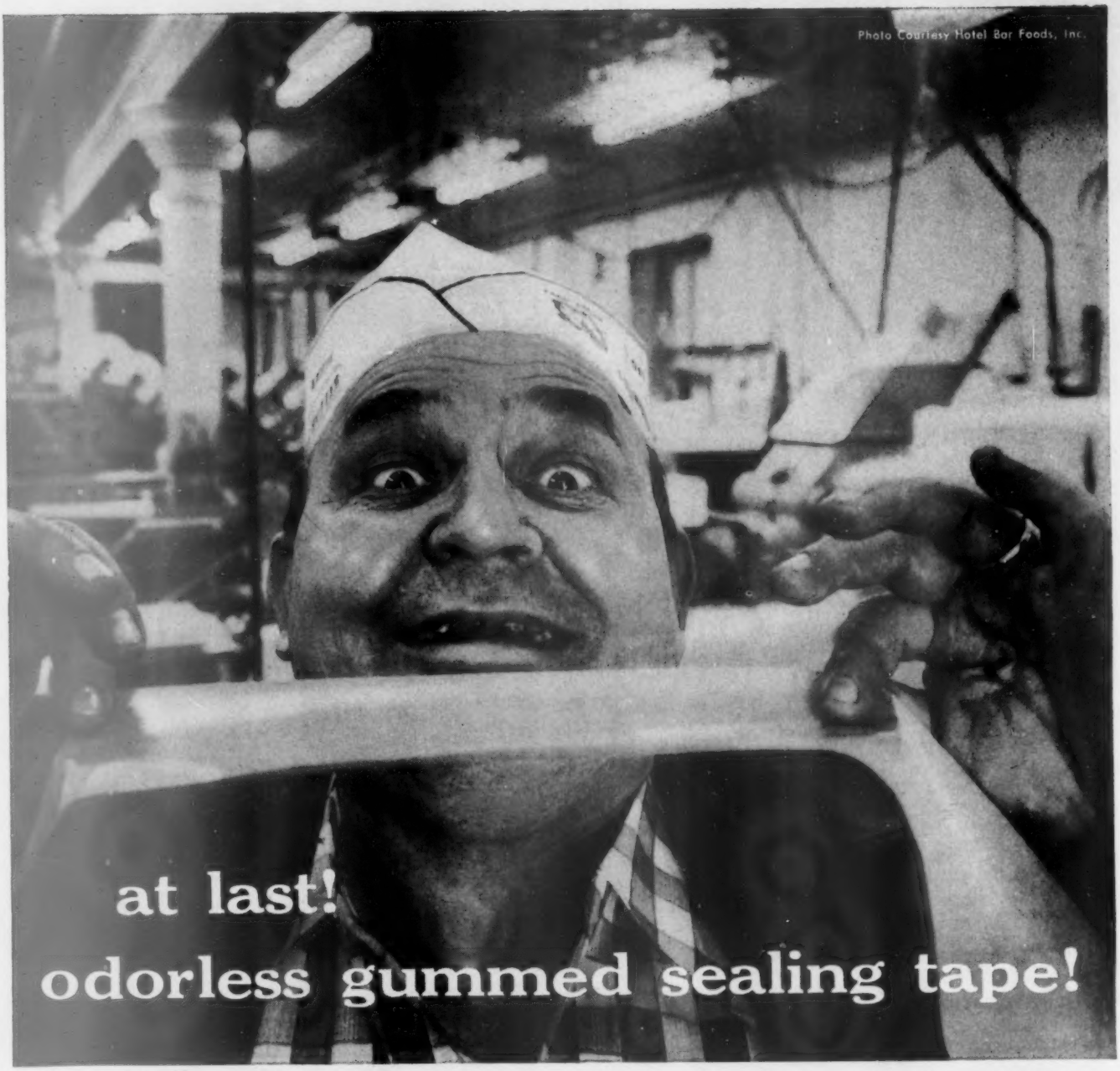
A SUBSIDIARY OF THE AMERICAN METAL PRODUCTS COMPANY OF DETROIT

3014 NORTH BURDICK amp KALAMAZOO, MICHIGAN

amp Plants and other Subsidiaries: (American Metal Products Co.—Detroit, Michigan—Union City, Tennessee) (AllianceWare, Inc.—Alliance, Ohio—Kilgore, Texas—Colton, California) (General Spring Products, Ltd.—Kitchener, Ontario, Canada) (Tube Reducing Corp.—Wallington, New Jersey)

Manufacturers of quality products for automobiles, trucks, aircraft, offices, factories, warehouses, and homes.

For More Information Circle No. 236 on Inquiry Card—Page 17



It's the latest development from Hudson's research laboratories – gummed tape made with *odorless* RENACEL adhesive!

RENACEL is a gummed tape adhesive *without any odor or scent.* Your personnel will welcome RENACEL'S unique, odorless quality, because it insures fresher, cleaner air in your shipping room. When tape made with odorless RENACEL seals your cartons, you *know* the contents will arrive safe and protected – free from odor.

RENACEL in Hudson gummed tape, provides other revolutionary advantages too! *It seals even with ice water.* You can seal instantly, anywhere–in refrigerated or cold, drafty shipping rooms–without heating dispenser water or using costly wetting agents.

RENACEL, teamed with Supple-ization (another Hudson exclusive), gives tape a smooth, silky feel, makes it even more pliant. The tape molds to the carton, handles easier, faster . . . Tape can be stored longer with safety. The rolls open easily, dispense smoothly . . . Bonding strength actually increases with time. Tape won't peel. Cartons remain sealed.

Now–*at no additional cost*–you can have more efficient sealing . . . more protection for your cartons . . . impressive dollar savings in tape! *Specify one of Hudson's Gummed Sealing Tapes* – Blue Ribbon for speed in complete closure–Orange Core for economical standard sealing.





CONSISTENTLY SUPERIOR

Hudson

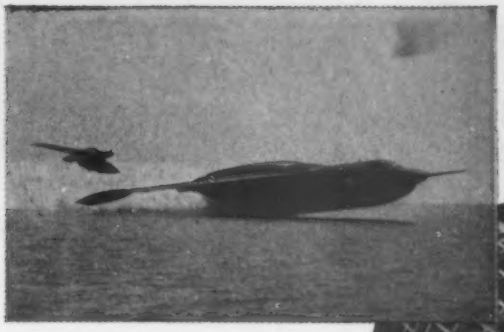
PULP & PAPER CORP.

477 Madison Ave., New York 22, N. Y.

For FREE TEST SAMPLE of Hudson Gummed Tape with RENACEL adhesive, write on your letterhead to Dept. P64. Request Blue Ribbon or Orange Core.

RENACEL is Another Product of Continuing Research by Hudson.

For More Information Circle No. 237 on Inquiry Card—Page 17

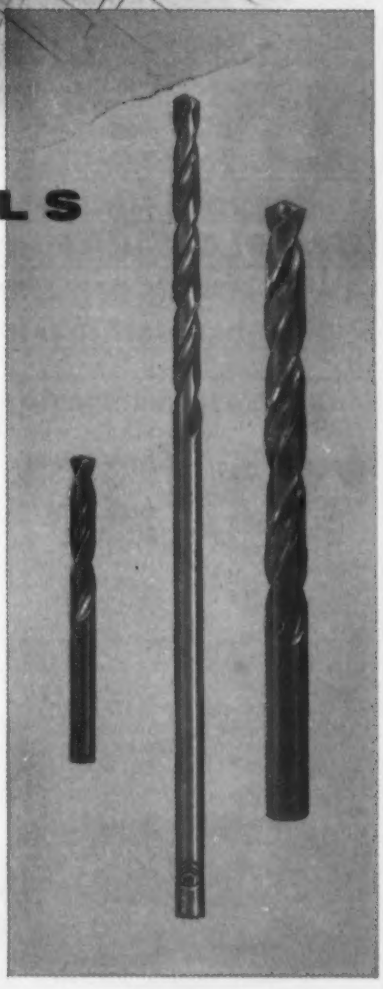




It also takes thousands of perfectly drilled holes... for a perfect take-off!

That's why *MARTIN* depends upon the quality performance of

NEW YORK TWIST DRILLS



By producing thousands upon thousands of clean, concentric holes without burrs — and more holes for every dollar, NEW YORK Twist Drills play an important part in the construction of the sleek new XP6M-1 SeaMaster and other Martin aircraft. Their own performance tests prove NEW YORK Drills are straight and true, with accurate points and extra smooth flutes.

We've been a major supplier of twist drills to this famous company for a number of years, now. Among the NEW YORK drills used in the Martin plants are our aircraft extension types, 6″ and 12″, adapter drills, stack drills, drills for stainless steel, 75 ST aluminum and titanium.

You can depend upon NEW YORK drills to do a quality job and save at least 20% on your twist drill bill, too. Other featured types are Knockout drills for aluminum, stainless steel and titanium rivets; Types A, B & C twist drills — National Aircraft Standards Specifications.

Write us now for catalog, technical manual and net prices

NEW YORK TWIST DRILL COMPANY, INC.

EASTERN HEADQUARTERS: 278 LAFAYETTE STREET, NEW YORK 12, N. Y.

MIDWEST HEADQUARTERS: 30-A NORTH CLINTON STREET, CHICAGO 6, ILL.

For More Information Circle No. 238 on Inquiry Card—Page 17



"THIS LUBRICANT DOUBLES THE LIFE OF GEARS"

—says TRINITY ALPS LUMBER CO.
Hayfork, California

"Our trucks have a forty mile county road logging haul over adverse grades, each truck making two complete round trips each working day. Our shop foreman in charge of maintenance, reports that with the use of LUBRIPLATE Lubricants there has been a minimum of truck down time and replacements of bearings and gears. The double reduction gears with LUBRIPLATE APG-140 has shown a saving of fifty per cent over previous operations."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

LUBRIPLATE LUBRICATION



MAKES CARS AND TRUCKS RUN BETTER AND LAST LONGER

LUBRIPLATE H.D.S. MOTOR OIL . . . THE OIL THAT NEEDS NO ADDITIVES

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



For More Information Circle No. 239 on Inquiry Card—Page 17

new products

Douglas Aircraft Cuts Nailing Costs



Making its own nails from a coil of knurled wire, the Sparton Auto-Nailer, used by the crating department of the Torrance Location, El Segundo Division, Douglas Aircraft Company, Inc., countersinks and clinches them in one operation to make strong and sturdy boxes or panels. The machine operates at the rate of three nails a second under one thousand pounds pressure to make a tight bond between the cleats and plywood.

This efficient method of nailing is an adaptation of the principle of the shoe nailer which has been used for many years.

No adjustment is necessary when changing from one size or design to another. If complete boxes are assembled, the clinching table is lowered to the desired depth.

Length of the nails is adjusted easily from one half inch to one and a half inches. A twelve foot portable extension table is used on each side of the Auto-Nailer to facilitate the handling of long panels.

Circle No. 49 on Inquiry Card—Page 17

3 important reasons you should use STAR "Moly"® High Speed Steel Blades



1 They outlast standard steel blades 10 to 1!

2 They assure high speed cutting performance second to none.

3 They are substantially lower in cost than any other type high speed steel blades!

Star was the first to successfully use molybdenum to make "Moly"® High Speed Steel Blades that would be tough, carry the load, retain sharpness and embody all the other high qualities and properties of heavy-duty blades. Order "Moly" High Speed Steel Blades from your Industrial Distributor. Rely on him for *all* your metal-cutting needs. Remember, he carries the complete line of STAR Hand and Power Hacksaws, Metal and Wood Cutting Band Saws and Hacksaw Frames.

FREE

Ask your Industrial Distributor for a supply of our NEW Metal Cutting Booklets and Wall Charts.



Sold Only Through Recognized Distributors

CLEMSON

CLEMSON BROS., Inc.
MIDDLETOWN, N. Y., U. S. A.

Makers of Hand and Power Hacksaw Blades, Frames, Metal and Wood Cutting Band Saw Blades and Clemson Lawn Mowers.

For More Information Circle No. 240 on Inquiry Card—Page 17

Quaker



Here's why this PETROCHEM fire hose is on guard throughout this D-X Sunray refinery



Get acquainted with your Quaker-Quaker Pioneer distributor. You'll find him of real help—not only for your regular needs — but also in emergency situations requiring extra fast supply. Write for free brochure and name of your nearest distributor.

This hose does *more* than fight fire. It fights off deterioration by oil and chemicals, stands up to abrasion, resists weather and functions safely under high pressure. Why? Because its oil-resistant Neoprene tube is enclosed in tough, wear-defying *Du Pont Dacron* impregnated with oil-proof Neoprene . . . this provides a tough, light, flexible hose, resistant to oil, both inside and out. Actually this hose is so strong that it can take pressures up to 500 lbs. and temperatures up to 300°F. . . . and so flexible that you can actually knot it. Easy to store, too! Either coiled or folded it takes little space.

These are some of the reasons why D-X Sunray's Oklahoma refinery has this hose . . . the first made for oil and chemical industries, at all fire stations . . . and why it will pay you to consider it in your safety planning. Complete Quaker-Quaker Pioneer line includes hose for every purpose, belting, packing and moulded rubber for every use.

DIVISIONS OF HKP H. K. PORTER COMPANY, INC.

H. K. PORTER COMPANY, INC.

QUAKER RUBBER DIVISION
Philadelphia 24, Pa.

QUAKER PIONEER RUBBER DIVISION
San Francisco 7, California

For More Information Circle No. 241 on Inquiry Card—Page 17

Fairbanks 5 Cost-Cutters For Your Light, Bulky Materials Handling Jobs

rugged construction and smoother operation take the load off your mind . . .



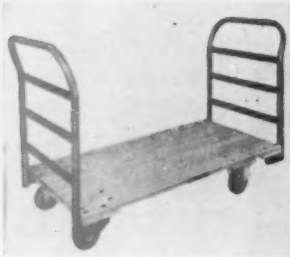
9215-S General Purpose Truck — more widely regarded as a necessary tool in shipping rooms, stores, warehouses, passenger baggage terminals and with transfer and express companies — for use on delivery trucks—where it is unsurpassed for handling small lot merchandise including round objects. Steel framed construction.



A-1448 Utility Truck — very popular in stores, offices, institutions, shipping rooms and factories for carrying small lot merchandise and widely used in bottling and beverage plants and on beverage delivery trucks for moving case lots. All steel welded construction, fitted with stair climber.



Lift Jack Platform Trucks — perfect answers for minimum cost temporary storage of raw material, parts, semi-finished goods or finished pieces. Jack handle has no moving parts — engages and disengages semi-live skid simply and quickly. One jack handle sufficient for a number of platforms.



"Bantamweight" Platform Trucks — outstanding values for lightweight materials handling from low initial cost through minimum operating expense. Readily adaptable to continuous conveyor systems. Light and strong construction, very mobile on Fairbanks "Lockweld" Double Ball Race Swivel Casters and matching rigid casters.



T-1114 Dollies — providing greatest maneuverability for bulky merchandise on Fairbanks "Lockweld" Steel **Double Ball Race** Swivel Casters. Very popular trucks with furniture movers, storage warehousemen and truckers.

YOURS ON REQUEST: Fairbanks Truck Catalog, complete with illustrations and specifications describing Fairbanks Trucks.

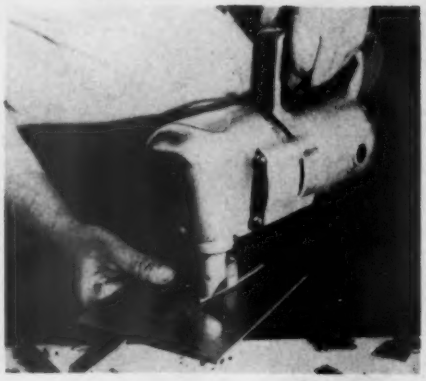
THE **Fairbanks** COMPANY
393 LAFAYETTE STREET, NEW YORK 3, NEW YORK
BRANCHES: NEW YORK 3
BOSTON 10, PITTSBURGH 22, ROME, GEORGIA
VALVES • TRUCKS • CASTERS • WHEELS • DART & "PIC" UNIONS



For More Information Circle No. 242 on Inquiry Card—Page 17

new products

Portable Nibbler Cuts 10 Gage Stainless Steel



Precision cutting of heavy gage sheet metals (ferrous and non-ferrous) is claimed for a 13 lb portable nibbler. It is rated to handle stainless steel of all types up to 10 gage; milder steels and non-ferrous metals to 8 gage. It cuts cleanly without distortion of metal or excessive burring. As the nibbler can be taken directly to the job, it helps reduce the materials handling problems common when heavy gage sheet is worked by stationary equipment. It follows patterns or templates and cuts from any angle. Minimum cutting radius is 6". Speed at full load is 600 strokes a minute. It is made by Fenway Machine Co., Edgemont & Clementine Streets, Philadelphia 34, Pa.

Circle No. 50 on Inquiry Card—Page 17

Steel Strap Dispenser

United States Steel's Gerrard Steel Strapping Division announces the development of a new dispenser for round steel strapping. Convenient to handle, the "mill coil container" is designed to pay off round steel strapping easily and without entanglement.

According to Gerrard officials, use of the new dispenser offers greater economies than ever before in using round steel strapping equipment.

Circle No. 51 on Inquiry Card—Page 17

For More Information Circle No. 243 on Inquiry Card—Page 17→



Size?
Finish?
or
Both?

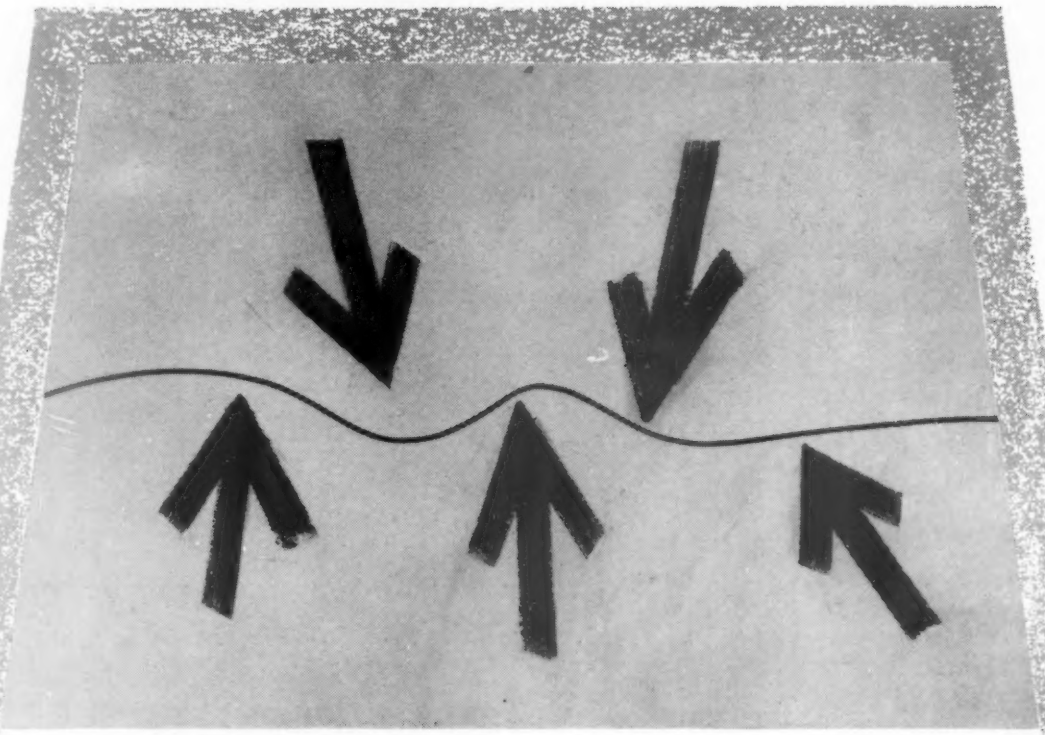
Whether you are reaming for size or finish *and* size; whether your reaming requirements are for a few holes or thousands, you'll find GTD-AMPCO reamers up there among the best. And there is a GTD-AMPCO field engineer at your service in most industrial centers. If you have reaming problems call any "Greenfield" sales office.

AMPCO TWIST DRILL DIVISION

GREENFIELD TAP and DIE CORP.
GREENFIELD, MASS.

NEW YORK *CHICAGO* *DETROIT* *LOS ANGELES*

RAYON tapes can g-i-v-e and take it!



Flexibility and impact strength let tough AVISCO rayon tapes roll with the punches.

Under shocks from sharp angles they merely g-i-v-e, then recover. Other types of tapes would burst under similar impact.

And with rayon, yarn and paper can be laminated both at once, then "creped" for even greater flexibility. No separate creping operation required, as with other stiffer fibers.

How come all this added stretch and strength? Because of *RAYON*. Where other tape reinforcements fray or shatter, rayon bends — and *holds*. Rayon is man-made, and these qualities are "built in," on purpose.

Perhaps AVISCO rayon could help you improve a present product, or create a new one. Just drop us a line or give us a call. Our entire research and production facilities are at your service.

American Viscose Corporation
350 Fifth Avenue, New York 1, N. Y.

America's Greatest Industries Grow with **AVISCO**

AVISCO®

For More Information Circle No. 244 on Inquiry Card—Page 17



How to reach the equivalent of 4 suppliers in one call for—

1. precision metal stampings and wire forms
2. custom-molded plastic parts in thermoplastic and thermosetting materials
3. custom plated, clad, or alloyed, cold-drawn wire in sizes from .250 to .002
4. electronic components designed to meet the latest needs of equipment designers

Most products include parts which call for one or more of the services above. Some products call for all of them. And all of these facilities are available to you in Sylvania's unique four-way service to designers. One call brings them to your door promptly.

Sylvania's Parts Division Representative serves as your complete parts and wire consultant. He is experienced in applying the benefits of completely modern and automatic equipment to your particular problems.

And he knows design problems straight through from drawings to deliveries. He's your liaison to Sylvania's complete staff of designers, engineers, production specialists, and tool and die makers.

Why not make that one call that will bring you the equivalent of four suppliers? Call your nearest Sylvania Parts Representative. He's listed in Sweets Catalog Service. Write for the "portfolio of 4-way service to designers."

PARTS DIVISION

metal stamping · special wire · molded plastic · electronic parts

Sylvania invites you to call on the Parts Division for consultation at any time without obligation

SYLVANIA®

SYLVANIA ELECTRIC PRODUCTS INC.
1740 Broadway, New York 19, N. Y.
In Canada: Sylvania Electric (Canada) Ltd.
University Tower Bldg., Montreal

LIGHTING · RADIO · TELEVISION · ELECTRONICS · ATOMIC ENERGY

For More Information Circle No. 245 on Inquiry Card—Page 17

2 Safe Ways to PROTECT Pressure Piping...



W-S SCREW-END and SOCKET-WELDING FORGED STEEL FITTINGS

Pipe joints are potential trouble spots in high pressure piping systems. Change in direction of flow causes turbulence, erosion and vibration. Watson-Stillman fittings are made to absorb this type of punishment. They're drop-forged for strength and toughness and safety-factor designed for the protection of your piping.

Choose between a welded piping system and a screwed one to suit your needs. Then choose W-S Screw-End or Socket-Welding Fittings to join your pipe. They're available in sizes ⅛" to 4" for piping up to 6000 lb. W.O.G. class. For high temperature or corrosive service you can get W-S Forged Stainless and Alloy Steel Fittings, too. Send today for our informative catalogs.



W-S FITTINGS DIVISION

H. K. PORTER COMPANY, INC.
Roselle, New Jersey

For More Information Circle No. 246 on Inquiry Card—Page 17

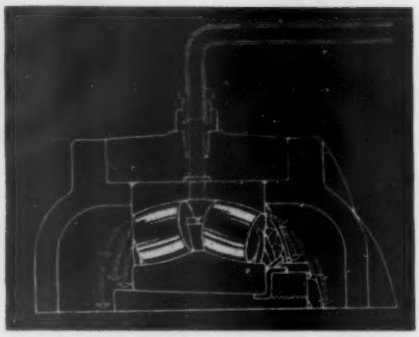
new products

Pre-Scored Corrugated Board Saves Packing Costs

National Container Corp., 7 Central Park W., New York 23, N.Y., will ship out corrugated board, pre-scored at the factory, in convenient unitized bundles. From this pre-scored board, cartons of various sizes or other forms of packing can be cut to make a tight, conforming pack that gives a shipped product maximum protection. Because this board, trade named "Fanfold," is bought at the bulk corrugated board price, small quantity set-up charges that accrue, when numerous sizes of regular boxes are bought, can be avoided. In addition, the board, stored in bundles, saves warehouse space, compared with various sized boxes.

Circle No. 52 on Inquiry Card—Page 17

Roller Bearings with Improved Lubrication



All spherical roller bearings 240mm (9.4488") O. D. and larger, made by SKF Industries Inc., Philadelphia 32, Pa., will be equipped with lubricating holes in the outer ring at no additional cost. This design change provides for the more efficient "center" rather than "side" lubrication of a bearing. The effect of having a lubricant flow from middle of bearing toward the outside, in-

(*Please turn to page* 168)



Quickest, friendliest way to reach a purchasing agreement:

Talk it over by telephone

There's nothing like a *personal discussion* to settle questions of quality, price, delivery, etc.

By telephoning an out-of-town supplier, you can reach an agreement quicker and cheaper than any other way—without ever leaving your desk.

Using the telephone regularly helps you (1) find the best price ... (2) keep goods flowing promptly to your plants and dealers ... (3) combine orders into truck or carload quantities. And it speeds many other equally important jobs.

We have some suggestions based on the experience of purchasing men in many companies—large and small. We'd like to pass them along to you. Call your Bell Telephone Business Office. A representative will visit you at your convenience.

LONG DISTANCE RATES ARE LOW

Here are some examples:

Cleveland to Pittsburgh	60¢
New York to Washington, D. C.	80¢
Dallas to New Orleans	$1.25
Chicago to Denver	$1.60
Boston to Los Angeles	$2.50

These are the daytime Station-to-Station rates for the first three minutes. They do not include the 10% federal excise tax.

Call by Number. It's Twice as Fast.

BELL TELEPHONE SYSTEM



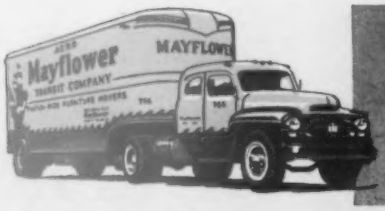
Overcoats for Table Tops...

WHEN YOU MOVE LONG-DISTANCE THE MAYFLOWER WAY

▶ Whatever the pieces of furniture in any household, Mayflower has developed the safest methods and equipment for protecting them. Some pieces require special covers, like this dining room table. Others require special dollies, or trucks. Whatever is needed Mayflower provides it. This is just one of the reasons why you can put the greatest confidence in Mayflower for the safe delivery of household goods. It means peace of mind for the people you move . . . time saved for your company . . . and satisfaction for you! Call Mayflower next time!

AERO MAYFLOWER TRANSIT COMPANY, INC. • INDIANAPOLIS

Mayflower Service is available through selected warehouse agents throughout the United States and Canada. Your local Mayflower agent is listed under Moving in the classified section of your telephone directory.



AERO Mayflower
NATION-WIDE FURNITURE MOVERS

America's Finest Long-Distance Moving Service

For More Information Circle No. 248 on Inquiry Card—Page 17

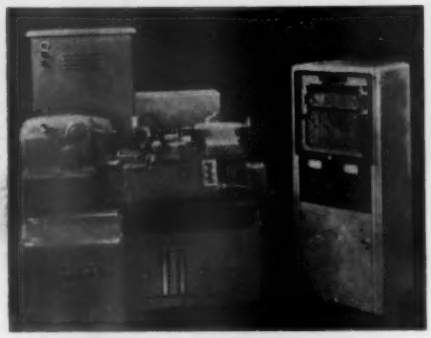
new products

(*Continued from page* 166)

stead of from sides toward center is to flush out old lubricant and, with it, any impurities. Thus, in this design, the fresh lubricant cleans as well as lubricates.

Circle No. 53 on Inquiry Card—Page 17

Lathes Can Select Automatic Work Cycles



Automatic electronic sequence programming equipment is available to provide increased versatility for lathes. This numerical sequence programmer makes available easily selected, fully automatic work cycles for volume production of precision parts. Key unit in the programming equipment is the electronic control panel. This panel incorporates push-type selectors which are used to preset the various operations desired from the lathe for the particular work piece to be turned. Once the proper sequence is programmed with the selectors, a touch of the start button sets in motion up to 5 automatic work cycles, using as many as 5 varied spindle speeds and 5 different feed rates. Any number of identical work pieces can be turned in succession without adjustment of the work panel. Programmer is produced by Monarch Machine Tool Co., Sidney, Ohio.

Circle No. 54 on Inquiry Card—Page 17

PLEASE USE READER-SERVICE CARD PAGE 17

"My new washer?"



Whirlpool-Seeger Corporation
(like other manufacturers)
has learned the advantages of
shipping major appliances in
corrugated boxes. Let us tackle
your packaging problems.



HINDE & DAUCH

Subsidiary of West Virginia Pulp and Paper Company

AUTHORITY ON PACKAGING • SANDUSKY, OHIO
13 FACTORIES • 42 SALES OFFICES

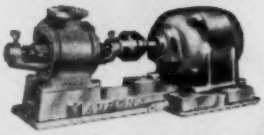
For More Information Circle No. 249 on Inquiry Card—Page 17



"TOPS" by EVERY TEST

Capacities to 150 G.P.M.

Heads to 600 Ft.



APCO Two Stage Pump for High Pressure Service

APCO is the highest development of the Turbine-Type Pump. Unsurpassed for small capacity high head duties. Handles non-lubricating liquids almost indefinitely without wear. Suited to "1001" duties. Write for Bulletin 111 or Condensed Catalog "M".

STAINLESS STEEL APCO PUMPS

We carry representative sizes of APCO's in stock in No. 316 Stainless Steel for prompt shipment.

Write for CATALOG "M"





DISTRIBUTORS IN PRINCIPAL CITIES

AURORA® PUMP DIVISION
THE NEW YORK AIR BRAKE COMPANY
12 LOUCKS STREET • AURORA • ILLINOIS

For More Information Circle No. 250 on Inquiry Card—Page 17



Rate Your Trucks For QDC* In 12 Seconds!

	Yes	No
Do they start and roll easily?	☐	☐
Are parts quickly, easily replaced?	☐	☐
Do they withstand years of abuse?	☐	☐
Are they designed for YOUR job?	☐	☐

Just one "no" in this check chart for *Quality Design and Construction means you're not getting the economies offered by Nutting trucks. Dependability, minimum maintenance and ease of operation are *always* the result of QDC. And QDC is the result of 65 years experience in the manufacture of floor trucks!

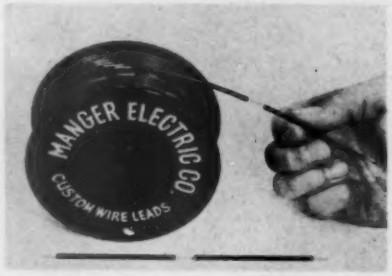
Nutting TRUCK & CASTER COMPANY
1271 Division Street, Faribault, Minnesota
Since 1891
Visit Nutting Booth 513,
Material Handling Exposition,
Public Auditorium—Cleveland—June 5-8

For *all* the facts call your Nutting representative . . . he's listed under "Trucks" or "Casters" in the yellow pages. Or write direct for the Junior Catalog.

For More Information Circle No. 251 on Inquiry Card—Page 17

new products

Conductors of all Gages Stripped



Of particular interest to manufacturers of products, containing multiple banks of electrical components having common terminating points, is an exclusive new process developed by Manger Electric Co., Stamford, Conn. It permits automatic center stripping of conductors of all gages, insulated with most materials. The stripped portions of the conductor can be regularly spaced or in varied sequence. The wire can be supplied in the form of individual center stripped leads or as a continuous coil.

Circle No. 55 on Inquiry Card—Page 17

Variable Speed Pulley Adapted To Limited Space

A ¼ hp pulley delivers speed ratios up to 2 to 1. It is so designed that it can be mounted with the belt take-off close to the motor and/or reversed, in which case the belt take-off is in an overhung position away from the motor. An A section belt is used. Maximum bore is ⅝" with keyway. Smooth belt surfaces reduce belt wear and add to the quietness of operation. Bronze oil-impregnated bearings eliminate need for lubrication for the entire life of the pulley. The latter is made by Lovejoy Flexible Coupling Co., Chicago, Ill., from fine grained castings, carefully machined for balance and fit.

Circle No. 56 on Inquiry Card—Page 17

The Engineer from Continental Screw Co. ...



...offers you the world's largest selection of stainless steel fasteners

Continental can guarantee faster service because of its tremendous inventory

No matter what your stainless steel fastener needs may be, Continental is in a position to serve you—thanks to the world's largest inventory of stainless steel fasteners.

All types of fasteners are represented in our inventory—wood screws, tapping screws, machine screws . . . in slotted or Phillips heads. And Continental has a full selection of stainless steel nuts . . . with close thread limits up to 3B.

This large inventory is the key to Continental's reputation for fast, accurate service. Literally acres of fasteners are waiting for your call. And Continental's specially trained engineers are always ready to analyze your specific needs. Take advantage of Continental's more than 50 years' experience. Call today.

Only Continental Engineers Are Required To Have This Training

Each engineer at Continental is required to undergo thorough experience producing ground thread taps and gages, with their exacting screw thread dimensions. This special training is passed on to you—at no extra cost.

CONTINENTAL SCREW COMPANY INC. 1904

—You can count on Continental.

Continental Screw Co.

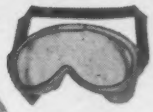
Manufacturers of Holtite Fastenings
New Bedford, Massachusetts, U.S.A.

For More Information Circle No. 252 on Inquiry Card—Page 17



Cup-type Goggles

CESCO RIGHT...before your Eyes!



Chemical Goggles



Spectacle-type Goggles



Plastic Frame Goggles



Cover Goggles



Lite-Specs



Fiber Glass Helmet



Approved Respirator Hood



Face Shields



WHATEVER TYPE OF SAFETY EQUIPMENT YOU NEED... BUY WITH CONFIDENCE from the CESCO Distributor listed here

• You don't need to hunt for the best source of safety equipment. Take it from CESCO, you can buy with confidence from the firms listed here. CESCO has the finest type of distributor representation—the kind you want when in the market for every type of safety and protective equipment. These firms are safety specialists and well stocked with equipment that has stood the test of time in industrial plants everywhere.

ATLANTA, GA.
Guardian Safety Equipment Co.
427½ Moreland Avenue, N. E.

BIRMINGHAM, ALA.
"L. P." Harless Company
2627 Seventh Avenue, South

BOSTON, MASS.
General Equipment Corporation
261 Franklin Street

BUFFALO, N. Y.
The Watson Company
1443 Main Street

CHICAGO, ILL.
Universal Safety Equipment Co.
5115 Diversey

CINCINNATI, OHIO
Williams & Co., Inc.
3231 Fredonia Avenue

CLEVELAND, OHIO
Williams & Co., Inc.
3700 Perkins Avenue

COLUMBUS, OHIO
Williams & Co., Inc.
851 Williams Avenue

DALLAS, TEXAS
Guardian Safety Equipment Co.
900 Jefferson Tower Bldg.

DETROIT, MICH.
Averill Equipment Company
19225 Conant Avenue

HOUSTON, TEXAS
Guardian Safety Equipment Co.
1915 Westheimer

KANSAS CITY, MO.
Safety, Incorporated
17 E. 31st Street

KNOXVILLE, TENN.
Safety Equipment Distributing Co.
832 W. Main Avenue

LITTLE ROCK, ARK.
Fire Appliance & Safety Co.
1114 W. Markham

LOS ANGELES, CALIF.
Guardian Safety Equipment Co.
7223 S. Main Street

LOUISVILLE, KENTUCKY
Williams & Co., Inc.
1109 S. Preston Street

MILWAUKEE, WIS.
Universal Safety Equipment Co.
3155 S. 7th Street

ORANGE, N. J.
Guardian Safety Equipment Co.
400 S. Jefferson Street
(New York-New Jersey Area)

PEORIA, ILL.
Universal Safety Equipment Co.
116 S. Garfield

PHILADELPHIA, PA.
Guardian Safety Equipment Co.
214 S. 45th Street

PITTSBURGH, PA.
Williams & Co., Inc.
901 Pennsylvania Avenue

ST. LOUIS, MO.
Safety, Inc.
2608 Olive Street

ST. PAUL, MINN.
Continental Safety Equipment, Inc.
1551 Selby Ave.

SALT LAKE CITY, UTAH
Universal Fire & Safety
Equipment Co., Box 1587

SAN MATEO, CALIF.
Guardian Safety Equipment Co.
220 Third Avenue

SPOKANE, WASH.
Spokane Safety Appliance Co.
North 219 Division Street

TOLEDO, OHIO
Williams & Co., Inc.
946 Kane Street

TULSA, OKLA.
Guardian Safety Equipment Co.
1742 S. Main Street

WICHITA, KANS.
Guardian Safety Equipment Co.
723 S. Broadway

MEXICO CITY, D. F.
Safety Equipment S. A.
Sullivan—95

MONTREAL, CANADA
The Butler Optical Company, Ltd.
1520 Mountain Street

You can buy with confidence from CESCO distributors

CHICAGO EYE SHIELD COMPANY
2315 Warren Boulevard
Chicago 12, Illinois



Approved Respirators

CESCO FOR SAFETY

For More Information Circle No. 253 on Inquiry Card—Page 17

new products

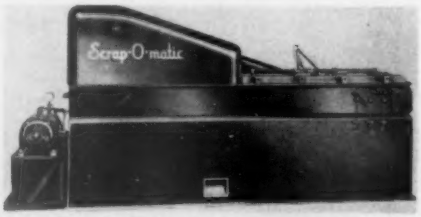
FHP Motor-Generator Sets Convert A-C To D-C



Designed in frame sizes 44, 66 and 74, fractional hp motor generator sets are available for inexpensively obtaining direct current from an alternating current source. The units can be used as a power supply for product testing in laboratories, as a power supply for variable speed motors and as self-contained exciters of larger units. They can also be used to supply energy for such industrial devices as magnetic chucks. Continuous operation at rated load is made possible by a ventilating system incorporating a fan on the shaft between the units. They are made by General Electric, Schenectady 5, N.Y.

Circle No. 57 on Inquiry Card—Page 17

Baler Handles All Types of Light Gage Metals



A lightweight scrap metal baler, that requires a minimum of space, hydraulically compresses light gage ferrous and non-ferrous scrap metal and trimmings into uniform 12" x 12" x 12" briquettes for easy handling and trans-

(*Please turn to page* 176)

For More Information Circle No. 254 on Inquiry Card—Page 17→



Cheapest way to clean up 1,400,000 miles of dirt per month

YOU'RE the P.A. for a big Southwestern transportation company. And you're on the spot!

You've just had an ear-blistering call from the chief of maintenance. He's very unhappy with the hose he's been using to steam-clean 1,400,000 miles of dirt and grime from the undersides of his 400 buses every month. The steam plus a powerful alkali cleaner plus oil and grease causes every length to fail in *two to four months.* Cost and lost time are too high. And so is the danger to personnel! What are *you* going to do about it?

You need help and fast. So you put in a rush call for the G.T.M.—Goodyear Technical Man. He hurries over, studies the situation, then recommends his Style MH Steam Cleaner Hose—one of the over 800 he's designed for specific jobs.

That was back in '52. Since then the G.T.M.'s hose has averaged *eight months' service,* with some lengths lasting *as much as a year.* Steam-cleaning is a much safer, cheaper operation, and the G.T.M. has become your No. 1 answer to any industrial rubber problem. You contact him often through your Goodyear Distributor or Goodyear, Industrial Products Division, Akron 16, Ohio.

It's smart to do business with your Goodyear Distributor. *He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

GOODYEAR

THE GREATEST NAME IN RUBBER

For Fast Accurate Setups

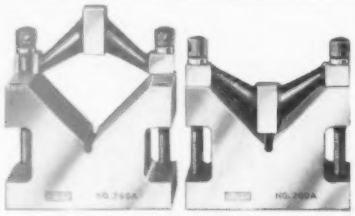
These Taft-Peirce Specialties are a 'must' for machining and inspection in the toolroom

V-BLOCKS



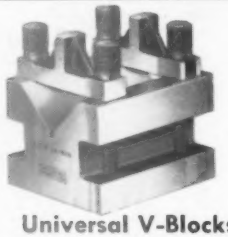
Cast Iron V-Blocks

Accurately ground to size in pairs. Made from finest quality seasoned grey iron castings. All surfaces except top are square or parallel with each other within .0005".



Steel V-Blocks

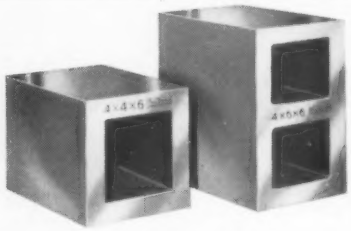
Sold in pairs only. Made of alloy steel, hardened and ground. "V" is central with sides, parallel with bottom, square with ends within .0003". All surfaces square or parallel within .0002".



Universal V-Blocks

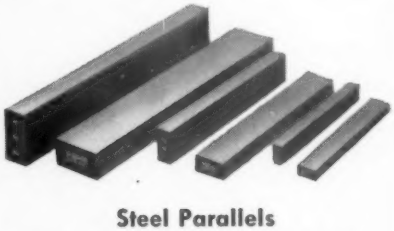
Hole in center permits quick, accurate set-ups. Also provides clearance for tool in drilling and boring. Made of alloy steel, hardened and ground on all working surfaces. All sides square within .0001". Sold singly or in pairs.

PARALLELS



Box Parallels

Made of finest quality close grained cast iron. All sizes are parallel within .00025" in 6 inches, square within .0005" in 6 inches. Will pair up within these limits.



Steel Parallels

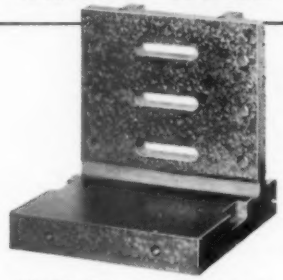
Made of alloy steel, hardened and ground on four sides. Exceptionally durable and free from seasonal changes. Not made to be used as squares.



Planer and Boring Mill Parallels

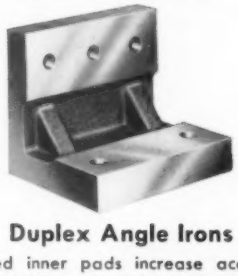
Made of finest quality cast iron. Width and thickness held within plus or minus .0005". Square within .0005" in 6 inches. Parallel within .0005" in total length.

ANGLE IRONS



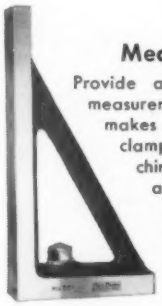
Multiplex Angle Irons

Save time by permitting a single setup of workpiece for many machining and inspection operations. All working surfaces scraped square within .0005" in 6", parallel within .0005".



Duplex Angle Irons

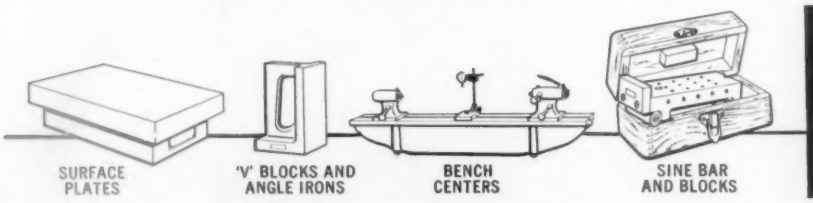
Finished inner pads increase accuracy, speed setup work and usually eliminate need for table clamping. Inner pads parallel to sides within .0005". Outer faces square within .0005" in 6".



Measuring Irons

Provide a fixed surface for measurements. Narrow width makes it convenient for clamping work on the machine table. Front face and bottom finished square within .0002" per foot.

For the complete story on these items and many more send for your copy of the Taft-Peirce Handbook.



T-P means Top Precision

THE TAFT-PEIRCE MANUFACTURING COMPANY, WOONSOCKET, RHODE ISLAND

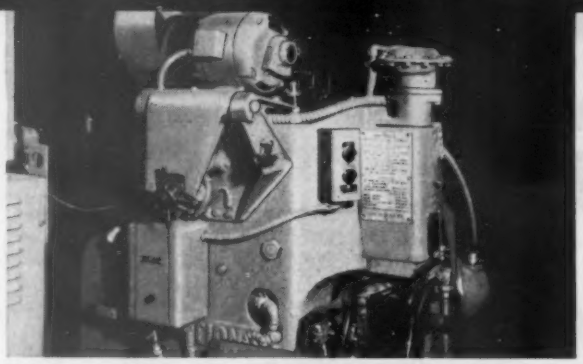
For More Information Circle No. 255 on Inquiry Card

For More Information Circle No. 256 on Inquiry Card→

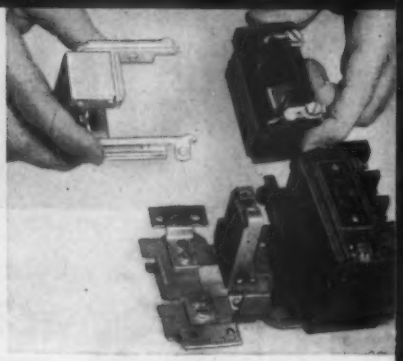
Where to use
3 KINDS OF G-E MAGNETIC STARTERS
and why . . .

NON-REVERSING STARTERS—for all full-voltage, single-speed motor applications

When remote control is desired, or when motors are started and stopped frequently—such as on machine tools, compressors, blowers, or similar equipment—use G-E magnetic starters. The strongbox coil is layer-wound with insulated wire, and impregnated with a solventless varnish. The windings are enclosed in a molded case which keeps out moisture and oil, and helps protect against accidental damage.



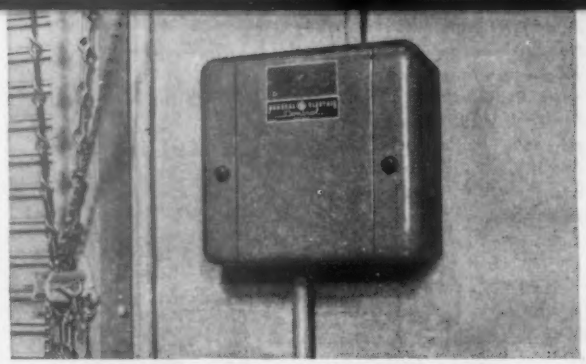
NON-REVERSING STARTER ON WELDER



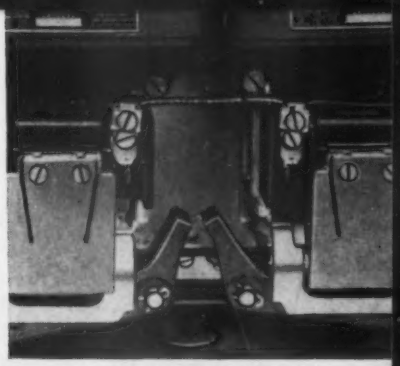
STRONGBOX COIL

REVERSING STARTERS—for control of motors which rotate in both directions

To control motors which reverse direction—on hoists, door openers, and planers, for example—select G-E reversing starters. They consist of two separate starters in a single case, with an interference-type mechanical interlock which prevents short circuits caused by one starter closing before the other starter opens the circuit. Extra electrical interlocks are also available.



REVERSING STARTER ON OVERHEAD DOORS



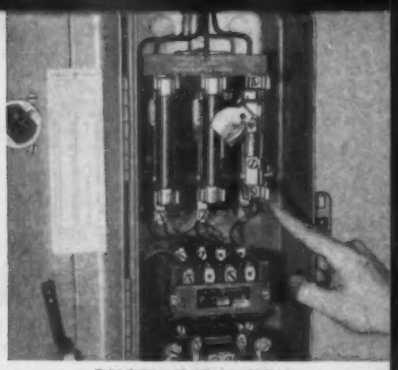
MECHANICAL INTERLOCK

COMBINATION STARTERS—for starter and short-circuit protection in one unit

G-E combination starters—which come in both reversing and non-reversing forms—have the extra feature of a fusible, or non-fusible disconnect switch, or circuit breaker for short-circuit protection and manually disconnecting the motor from the line. Interchangeable fuse clips provide maximum flexibility, enable you to adapt your starter to new circuit conditions. 733-5



COMBINATION STARTER ON TURRET LATHE



DISCONNECT SWITCH

FOR ANY APPLICATION—specify General Electric for best quality, most reliability

For further information write for bulletin GEC-1260, or contact your nearest General Electric Apparatus Sales Office or Distributor.

GENERAL ELECTRIC

BLOOMINGTON, ILLINOIS

CM HOISTS

VERSATILE TOOLS that belong in every efficient plant



CM CYCLONE

Light Weight—Heavy Duty
High Speed Chain Hoist
Capacities from ½ to 10 tons

Made of tough aluminum alloy. Carries with ease. 1 ton model weighs only 36 pounds. 42% fewer parts. Requires little maintenance. Sealed-in lifetime lubrication. 96% efficient. Equipped with CM-Alloy flexible welded load chain. The best there is in hand hoists... yet reasonably priced.

CM PULLER

Lifts or Pulls
At Any Angle
¾, 1½, 3 and 6 ton capacities

For lifting, pulling, skidding, stretching, straightening. Use at any angle. Eliminates dangerous makeshift methods. Automatic brake. ¾ ton model weighs only 13 pounds. CM-Alloy flexible welded load chain. Time savings quickly repay low initial cost.

● **ALSO** Meteor Wire Rope Electric Hoists (½ to 5 tons), Comet Electric Chain Hoists (⅛ to 2 tons), CM Trolleys and CM Cranes.

CALL THE CM DISTRIBUTOR FOR CATALOGS, PRICES AND QUICK DELIVERY FROM STOCK.

CM HOISTS AND CHAIN

CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKINNON COLUMBUS CHAIN LIMITED, ST. CATHARINES, ONTARIO
For More Information Circle No. 257 on Inquiry Card—Page 17

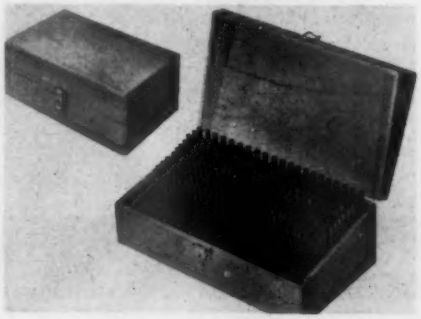
new products

(*Continued from page* 172)

portation. The nine cubic foot charging compartment will take up to 54″ lengths of 24 gage or lighter metal, or steel wire ranging up to 16 gage. It will produce a briquette every three minutes, with an eight hour shift capacity of as high as 140 briquettes, depending on density of the metal. The baler has only 3 operating controls and is designed for one man operation, even of the unskilled labor type. It is a product of the Balemaster Div., East Chicago Machine Tool Corp., East Chicago, Ind.

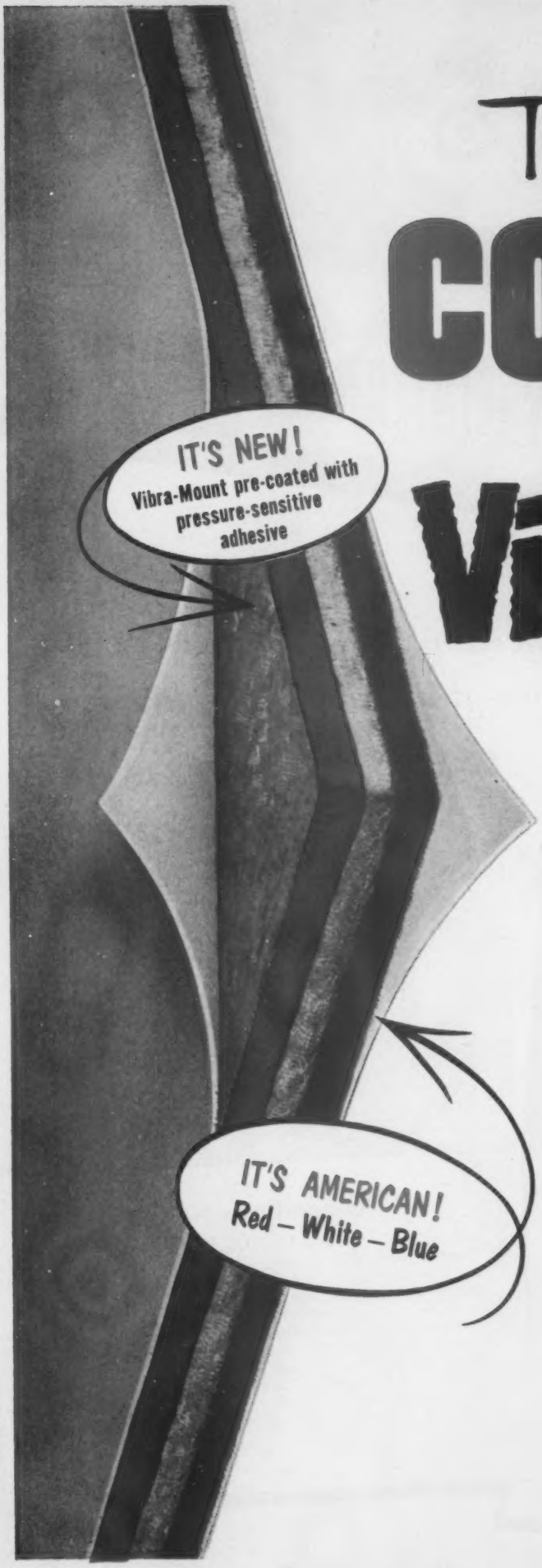
Circle No. 58 on Inquiry Card—Page 17

Drill Blanks Double As Gages, Test Bars, Etc.



A set of drill blanks is on the market, in which each series is .001″ larger than the preceding, starting with .015″ and ending with .500″. Each blank is made of hardened and ground high speed steel, ground to a tolerance of +.0002″ and —.0000″. All 485 pieces are assembled together in a single wooden case, weighing 60 lb. Their uses, according to the manufacturer, The Hayden Twist Drill Co., 8626 Lynden, Detroit 38, Mich., are extremely versatile. Besides their obvious use as gages, the drill blanks can also be used as test bars, sine plate members, jig locating or index pins. They can also make end mills, drills, bits, centers, etc., or be ground into scribes, prys, etc.

Circle No. 59 on Inquiry Card—Page 17



This FELT can CONTROL that Vibration!

When machinery has the shakes, put it on Vibra-Mount* Felt. This resilient cushion greatly reduces the amount of vibration transmitted to the floor, as much as 85%. People are happier, buildings safer. Vibra-Mount Felt is long lived because it takes compression with a minimum of set. In almost every case lag bolts are unnecessary, so machines can be rearranged with a minimum of difficulty. Write for FREE booklet, "How to Reduce Vibration." For technical information, ask for Data Sheet No. 10.

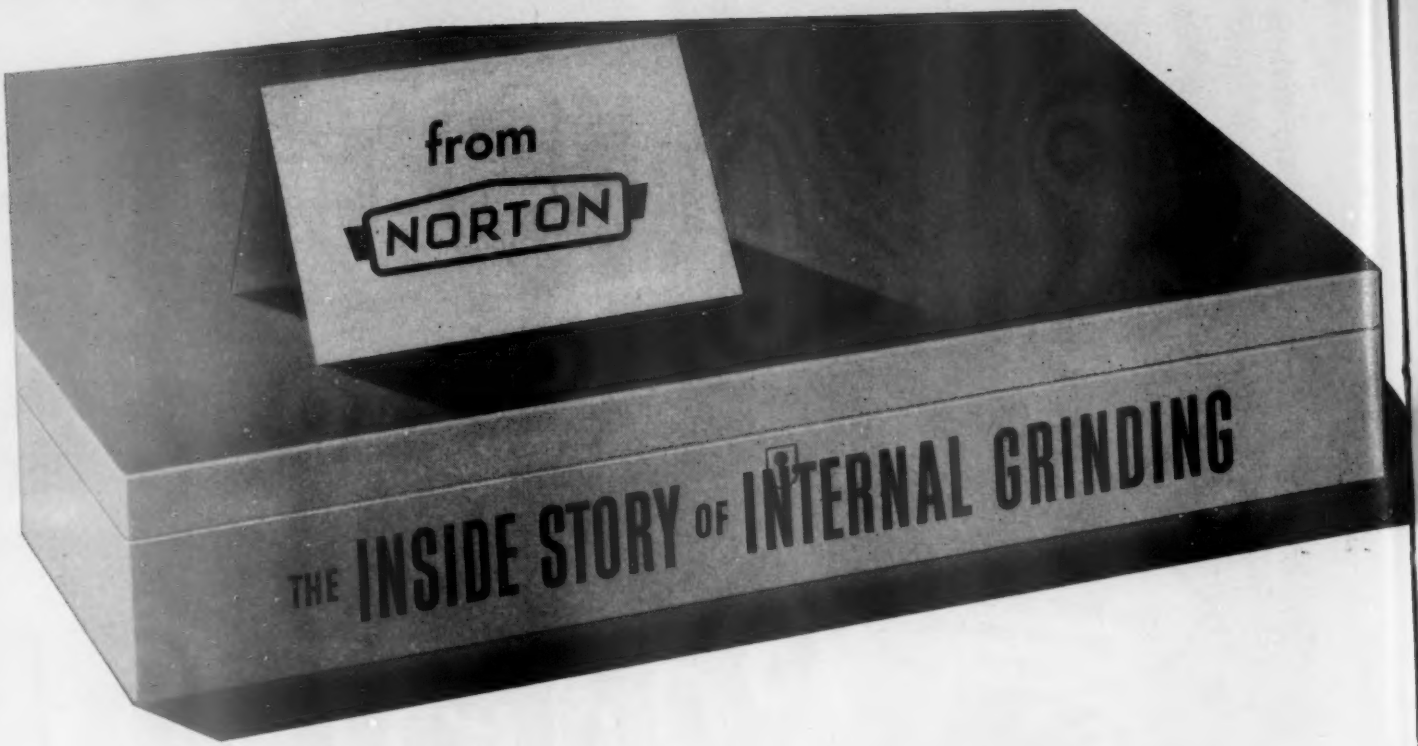
*T. M. Reg.

American Felt Company

TRADE MARK ®

GENERAL OFFICES: 74 GLENVILLE RD., GLENVILLE, CONN.
SALES OFFICES: New York, Boston, Chicago, Detroit, Cleveland, Rochester, Philadelphia, St. Louis, Atlanta, Greenville, S. C., Dallas, San Francisco, Los Angeles, San Diego, Portland, Seattle, Montreal.—PLANTS: Glenville, Conn.; Franklin, Mass.; Newburgh, N. Y.; Detroit, Mich.; Westerly, R.I.—ENGINEERING AND RESEARCH LABORATORIES: Glenville, Conn.

For More Information Circle No. 258 on Inquiry Card—Page 17



How Norton wheels add the "TOUCH of GOLD" across the range of internal grinding jobs



Take a Good Look at Precision

It's easy to see why Norton internal grinding wheels are such outstanding precision performers. They're precision-built, by an exclusive process that results in absolutely uniform grinding action in wheel after wheel of the same specifications. This means that when you change wheels you have no adjustments to make, the new ones give you the same fast, cool-cutting performance. And you can add this time-saving, productimproving "Touch of Gold" to every internal grinding job you do, because Norton wheels are made in types and sizes for every application.



The G Bond Has No Equal

No other vitrified bond ever developed can match the Norton G Bond for efficiency and economy in precision and semi-precision grinding applications. It holds abrasive grains until each has done its full share of the work, keeping the wheel's cutting surface at constant peak efficiency. That's why G Bond wheels cut freer and faster; produce finer finishes, dress easier and do more work per dressing and per wheel. On many jobs the G Bond and 32 ALUNDUM* abrasive — recommended for heavy feeds and fast stock removal — make the ideal "Touch of Gold" team for profitable precision grinding.



How Close Can You Get?

With the right Norton wheel you meet closest tolerances in the shortest possible time. The performance data on this precision job tells you why. The Norton wheel is grinding an inner bearing race of 52100 steel. *I.D.:* 5.5118". *Stock removal:* .005" to .007". *Limits:* +.0000", −.0001". *Finish:* 10 microinches RMS. *Time:* 90 seconds.

One Norton Wheel—Two Good Jobs

In grinding this trunnion, one Norton wheel is used on both ends. Material is stainless steel No. 304. The larger hole measures $13\frac{1}{16}$" I.D. x 4" long; the smaller is $5\frac{1}{2}$" I.D. x 4" long. Stock removal from each end is .015", to tolerance limits of ±.0002". Four complete trunnions — eight grinding jobs — are done each day.



A Mighty Fine Finish

This Norton wheel is grinding a bearing sleeve of 52100 steel, 62 to 63 Rockwell C. The hole is $3\frac{1}{4}$" I.D. x $4\frac{23}{32}$" long. From .005" to .006" of stock is removed, within limits of +.0008", −.0000". The surface is finished to 4 microinches RMS and grinding time is 30 minutes each.

Ask Your Norton Distributor

to arrange a test of these top-performing "Touch of Gold" internal grinding wheels in your plants. Or write direct to your nearest Norton district office. And remember: only Norton offers you such long experience in both grinding wheels and machines. NORTON COMPANY, Worcester 6, Mass. Offices in nine cities. Distributors in all industrial areas — listed under "Grinding Wheels" in your phone directory, yellow pages. Behr-Manning, Troy, N.Y., division of Norton Company. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts.

NORTON

ABRASIVES

Making better products... to make your products better

NORTON products: Abrasives • Grinding Wheels
Grinding Machines • Refractories

BEHR-MANNING products: Coated Abrasives
Sharpening Stones • Pressure-Sensitive Tapes

W-1686

*Trade-Mark Reg. U.S. Pat. Off. and Foreign Countries

For More Information Circle No. 259 on Inquiry Card—Page 17

HEATS FAST SAVES TIME

johnson

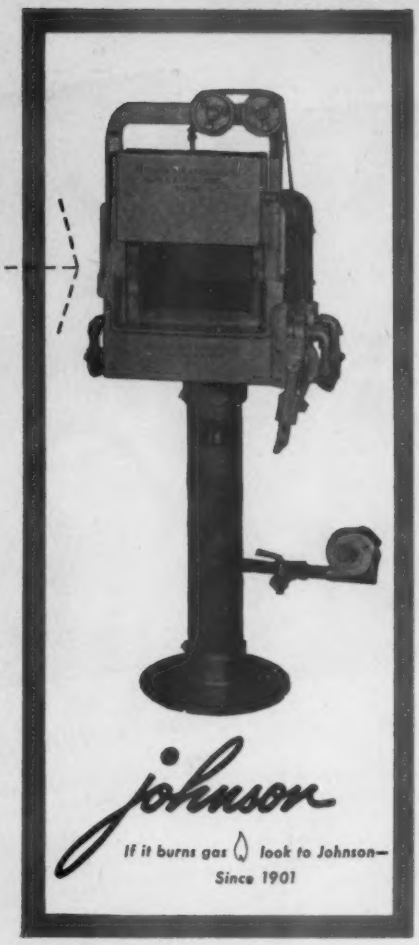
NO. 142 HEAT TREATING FURNACE

Start heat treating high speed and carbon steels while other furnaces warm up. Powerful burners in this efficient furnace get heat up to 1300°-2350° F. range in minutes. Temperatures accurately and quickly regulated. Ratchet-operated door opens upward — no need to open fully every time. High temperature refractory-lined firebox keeps heat uniform — 7" by 13" by 16½". 200,000 BTU's per hr. Carbofrax hearth, G.E. Motor and Johnson Blower included ..... F.O.B. Factory, $337.00

WRITE TODAY FOR FREE JOHNSON CATALOG

Johnson Gas Appliance Company
603 E Avenue N.W.,
Cedar Rapids, Iowa





For More Information Circle No. 260 on Inquiry Card—Page 17

Save on Your INDUSTRIAL TRACK



FULLY GUARANTEED



FOSTER QUALITY RELAYING RAILS

Lower installation and maintenance costs—handle more cars better. Foster nationwide warehouses also stock every New Rail Section 12# through 175#, Switch Material and Accessories to meet your specific job requirements.

SEND FOR CATALOGS P-4

RAILS - TRACK EQUIPMENT - PIPE - PILING
L B FOSTER CO.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

For More Information Circle No. 261 on Inquiry Card—Page 17

UNIT MACHINING COST CUT 17% ON THIS GRAY IRON CASTING



...thanks to FERROCARBO®

Users everywhere report similar experiences. In fact, on 67 machining tests in 11 large machine shops, castings of gray iron treated with FERROCARBO averaged 89.5% greater machinability per tool than untreated castings. These premium castings are finer-grained, denser, stronger, yet they COST YOU NO MORE... because your foundryman, using FERROCARBO, makes worthwhile savings in raw material costs.

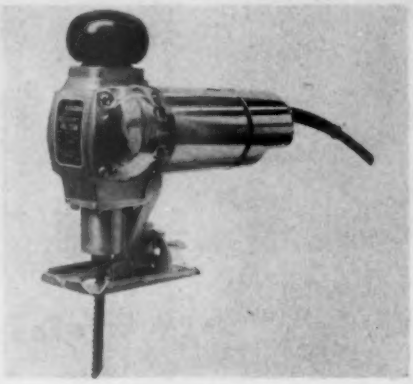
FOR FREE BOOKLET on FERROCARBO, citing actual case histories of faster machining, with longer tool life, write The Carborundum Company, Dept. 32, Niagara Falls, N.Y. 84-68

CARBORUNDUM®

For More Information Circle No. 262 on Inquiry Card—Page 17

new products

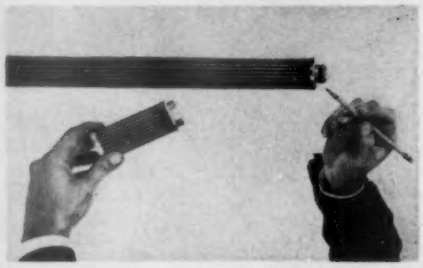
6½" Heavy-Duty Saw



The Black & Decker Mfg. Co., Towson 4, Md., has introduced a 6½" heavy-duty saw that will cut a 2x4 at 45° with blade to spare, thereby permitting several resharpenings. The tool has been designed to handle the toughest sawing jobs. The saw has many important safety features. Among these is a newly designed switch guard that prevents accidental tripping of the instant release switch. Also, to keep chips and dust from flying in the operator's eyes, there is a built-in chip deflector. The saw has a maximum depth of cut of 2-5/52" at 90° and 1-7/8" at 45°.

Circle No. 60 on Inquiry Card—Page 17

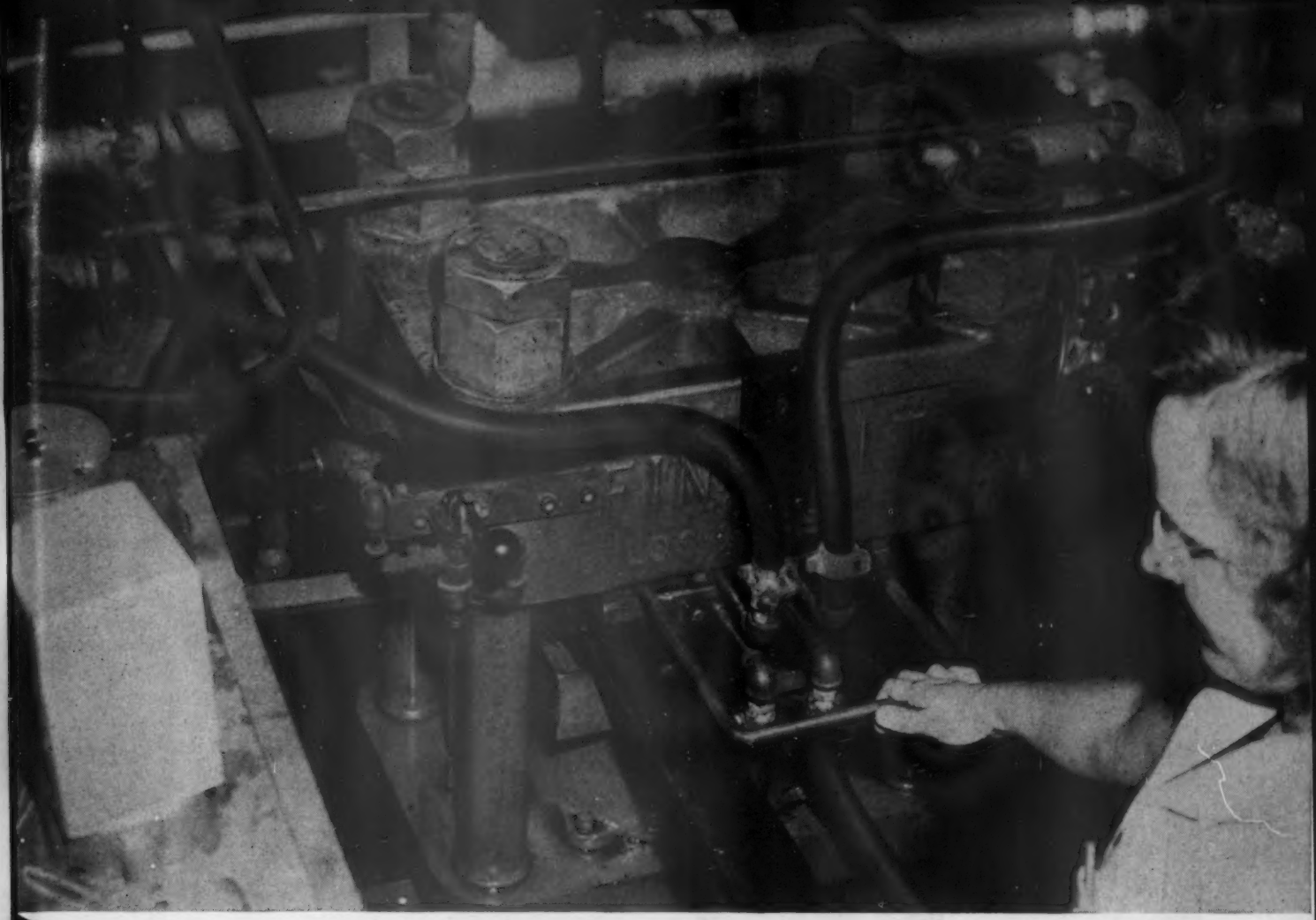
Filter Is Made From Sintered Metal



A sintered metal filter has been developed by Purolator Products, Inc., Rahway, N.J., which will handle fluids up to 1000 F. The filter can remove particles as

(Please turn to page 182)

For More Information Circle No. 263 on Inquiry Card—Page 17→





Here's a Record Making Hose!

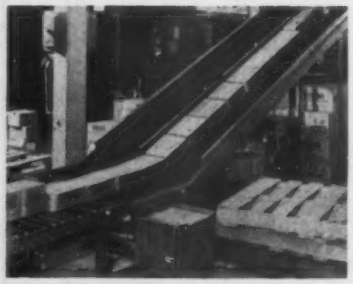
Every 30 seconds superheated steam follows ice water—and Thermoid Hose outlasts all others

In manufacturing phonograph records, Plastic Products Company, Memphis, uses Thermoid Wire Braid Steam Hose to carry steam into its molds at 375° F. under 175 lb. pressure. Every 30 seconds, the steam is followed by icy cold water—*through the same hose!* This hot and cold cycle goes on eight hours a day, month after month.

Thermoid outlasted every other hose tried by this record maker.

Here is another example of how Thermoid Personalized Service fulfills special demands. To meet the most exacting requirements of any plant application, your Thermoid Distributor carries a complete line of Hose, Conveyor Belting and Multi-V Belts.

There's a Thermoid Conveyor Belt



. . . and Matched Multi-V Belts for every industrial need.



Thermoid

Thermoid Company, Trenton, N. J.



For More Information Circle No. 264 on Inquiry Card—Page 17

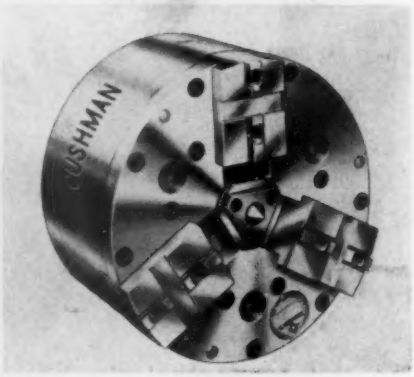
new products

(Continued from page 180)

small as one micron in size from a wide range of fluids, including such corrosive materials as nitric, hydrochloric, sulphuric, or phosphoric acids and strong alkalies. The one-piece sintered element can be made in a variety of diameters and lengths and its radial fin construction can be supplied in specific depths and numbers of convolutions to give extended area within a confined space. Filters of stainless steel, monel and other metals can be made as required. It handles differential pressures up to 500 psi.

Circle No. 61 on Inquiry Card—Page 17

Chuck Permits Minute Adjustment to .0005″



A chuck has been put on the market that is designed for minute accuracy which must be held to closer limits than possible with the standard scroll type chucks. Adjustment is simple, quick and the chuck will repeat to .0005″ or better total indicator reading. Because of its extreme accuracy and jaw capacity, the chuck can replace even the most accurate collet chuck and its necessary range of collets. Adjustment mechanism of chuck consists of four screws, equally spaced about periphery of chuck body. It is made by The Cushman Chuck Co., 806 Windsor St., Hartford 2, Conn.

Circle No. 62 on Inquiry Card—Page 17

Mr. Purchasing Man:

need an "Engineering Head"



When You Buy

MOTORS · CONTROL · DRIVES?

If you do, Allis-Chalmers is ready to work with you, your engineering staff and/or your consultants. We think two heads are better than one; may we supply the second one?

Get Complete Information. Call your nearby A-C office or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.

Other Helps Available from Allis-Chalmers

Price Books
Is your A-C book up to date? Let us check it for you.

Inventory Control
There may be locally maintained stocks that can cut your stock.

Standardization
A-C engineers can help cut the number of sizes used.

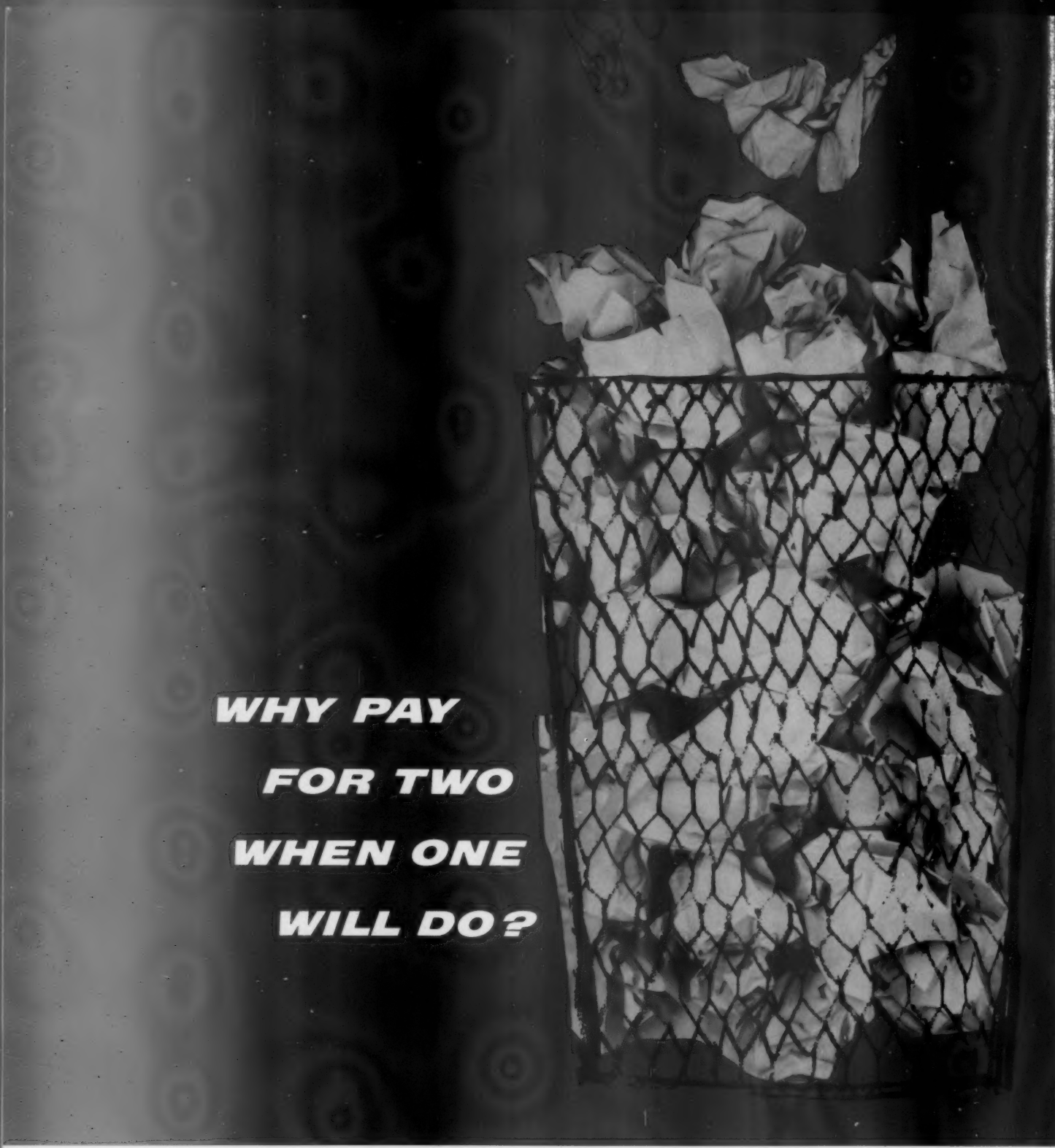
Certified Service Factory Parts
Factory-approved methods are available in all industrial centers.

A-4826

ALLIS-CHALMERS

For More Information Circle No. 265 on Inquiry Card—Page 17

For More Information Circle No. 266 on Inquiry Card—Page 17→



Fist test helps you to see why Scott Towels cut towel consumption



Try this: Put your fist into a Scott Towel, see how it stretches and conforms to your hand—how the drying surface instantly comes into play. This makes for thorough drying. Result: one Scott Towel is used instead of two or more.



ONE SCOTT TOWEL DRIES BOTH HANDS!



It's this simple: If towel consumption is high in your washrooms, your towel costs are high. If consumption is low, your towel costs are down-to-earth. *Don't ever confuse initial price per case with economy.*

The Scott Towel has the qualities needed to keep consumption low—softness, stretch and high absorbency. One Scott Towel dries both hands quickly and comfortably. There's no extra consumption, no extra washroom maintenance—cost is at a minimum.

Scott's the brand of towel your people buy for home more often than any other brand.

Give your local Scott representative or distributor a call today. Let him show you how you can determine the cost-reducing possibilities of Scott Towels in your washrooms.

Another quality product of

SCOTT PAPER COMPANY

SAVE MONEY!

get
better service
on
Vibration dampeners and snubbers
•
Molded parts
•
Clutch facings
•
Molded friction parts



let
WORLD BESTOS
serve you!

World Bestos offers you more than 30 years' engineering and manufacturing experience. Chances are our immense resources and facilities can supply you with molded parts and friction components—to meet your requirements—at a savings in both time and money.

● Send your blueprints (or samples) for prices and delivery information to WORLD BESTOS, Industrial Products Section, New Castle, Ind., Phone: 2360.

WORLD BESTOS
NEW CASTLE, INDIANA
DIVISION OF THE
Firestone
TIRE & RUBBER CO.

For More Information Circle No. 267 on Inquiry Card—Page 17

new products

Motor Driven Trolley For Electric Power Hoists

A line of motor driven trolleys, for installation on electrically powered hoists, having capacities from 1000 lb to 12,000 lb, is being marketed by Shaw-Box Crane & Hoist Div., Manning, Maxwell & Moore, Inc., Muskegon, Mich. They are available in a variety of traverse speeds, ranging from 25 fpm to 130 fpm, depending on size and voltage requirements. All models are adjustable to fit a wide range of I-beams, permitting relocation of a trolley to another installation having a different size I-beam without reworking the trolley.

Circle No. 63 on Inquiry Card—Page 17

Drinking, All-Purpose Water at Same Point



A deck type drinking fountain now conveniently furnishes sanitary drinking water and general purpose water at the same point of use. The lightweight, stainless steel unit can be equipped with any combination of bubblers, glass fillers, and faucets offered as accessory fittings. With this fountain, laboratories and similar type users are provided with the faucet water that they require—both hot and cold—and have a convenient source of sanitary drinking water at hand. The fountain is furnished by Sunroc Corp., Glen Riddle, Pa., in four sizes, ranging from 24″ x 14″ to 30″ x 18″.

Circle No. 64 on Inquiry Card—Page 17



NEW BEDFORD ROPE

first on the Clippers, first choice on modern vessels.

Industrial users, too, rely on New Bedford Rope.

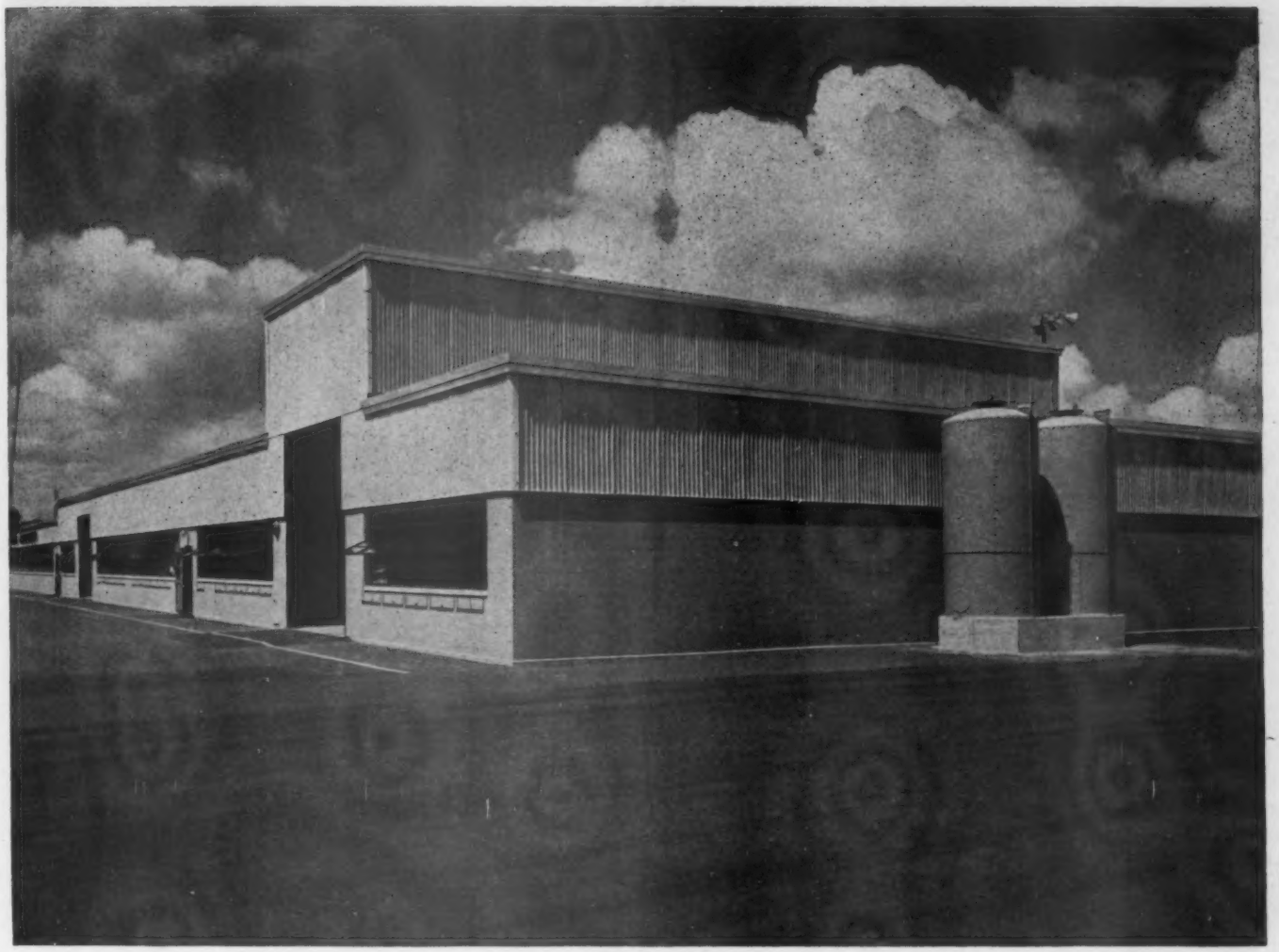
They know:

- It's tough and strong.
- Laid right for easy handling.
- Treated for protection against moisture and dry rot.
- Lubricated to reduce internal friction.



NEW BEDFORD CORDAGE COMPANY
NEW BEDFORD, MASSACHUSETTS
Serving the Maritime Industry Since 1842

For More Information Circle No. 268 on Inquiry Card—Page 17



K&M Corrugated Asbestos Sheets, used as siding on the Operations Center of a southeastern utility company, complement the clean, modern lines of the building. These sheets are also used on a pitched roof, not shown in the photograph. Engineering and supervision of construction: Stone and Webster Engineering Corporation. Applicator: Whatley Roofing and Sheet Metal Works, Tampa, Florida.

Attractive, weather-proof, fire-proof, maintenance-free
K&M Corrugated Asbestos

Building a new plant? Modernizing your present one? In either case, you'll gain important cost and other advantages with K&M Corrugated Asbestos-Cement Sheets. They cannot burn, can't rot or corrode—withstand the ravages of time and weather year after year. Because K&M Corrugated Asbestos-Cement Sheets rarely require maintenance, *never* need protective painting, their upkeep is held to the barest minimum.

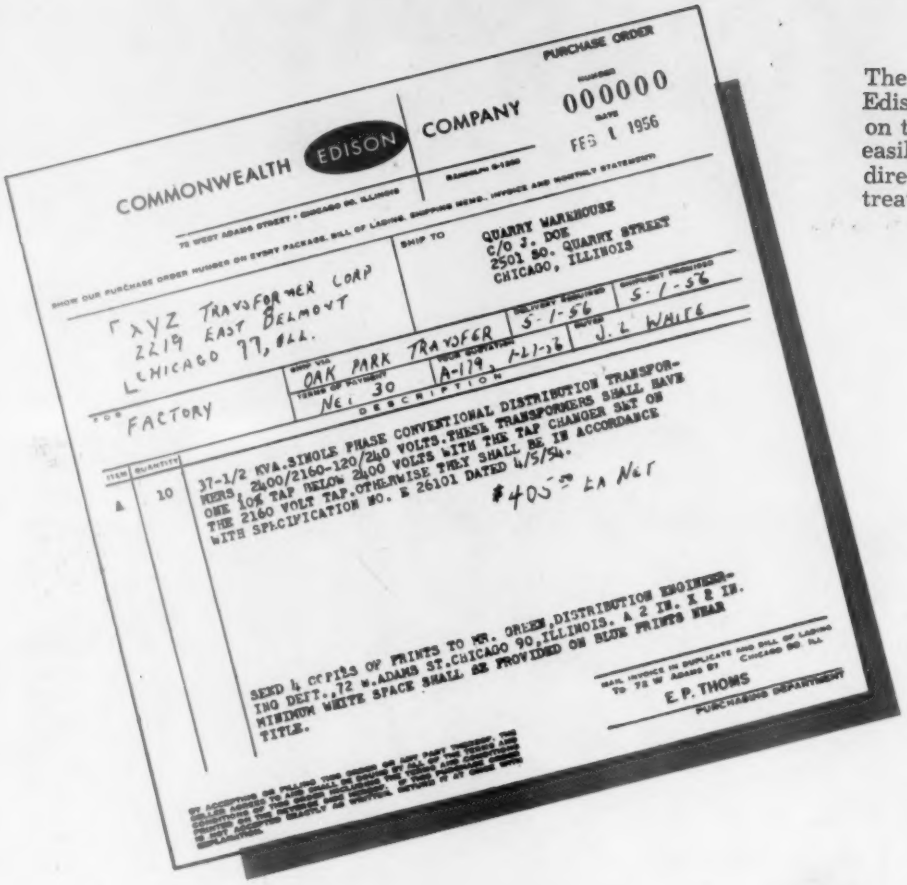
Easy to apply. These corrugated sheets offer big savings in application costs. They go on quickly, are easily sawed, drilled, and fitted on the job.

Write for complete details on K&M Corrugated Asbestos Roofing and Siding.

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

K&M best in asbestos®

For More Information Circle No. 269 on Inquiry Card—Page 17


PURCHASE ORDER

COMMONWEALTH EDISON COMPANY

000000

FEB 1 1956

SHIP TO QUARRY WAREHOUSE
C/O J. DOE
2501 SO. QUARRY STREET
CHICAGO, ILLINOIS

XYZ TRANSFORMER CORP
2219 EAST BELMONT
CHICAGO 77, ILL.

FOR FACTORY

SHIP VIA OAK PARK TRANSFER
TERMS OF PAYMENT NET 30
DESCRIPTION

DELIVERY REQUIRED 5-1-56
PURCHASE NUMBER A-179
BUYER J. L. WALKE
DEPARTMENT REQUIRING 5-1-56

ITEM	QUANTITY	
A	10	37-1/2 KVA.SINGLE PHASE CONVENTIONAL DISTRIBUTION TRANSFORMERS SHALL HAVE 2400/2160-120/240 VOLTS.THESE TRANSFORMERS SHALL HAVE ONE 10% TAP BELOW 2400 VOLTS WITH THE TAP CHANGER SET ON THE 2160 VOLT TAP.OTHERWISE THEY SHALL BE IN ACCORDANCE WITH SPECIFICATION NO. E 26101 DATED 4/5/54. $405.= EA NET

SEND 4 COPIES OF PRINTS TO MR. GREEN,DISTRIBUTION ENGINEERING DEPT.,72 W.ADAMS ST.CHICAGO 90,ILLINOIS. A 2 IN. X 2 IN. WINDOW WHITE SPACE SHALL BE PROVIDED ON BLUE PRINTS NEAR TITLE.

MAIL INVOICE IN DUPLICATE AND BILL OF LADING TO 72 W ADAMS ST CHICAGO 90 ILL

E.P. THOMS
PURCHASING DEPARTMENT

The vendor's copy of the Commonwealth Edison purchase order form, as produced on the Ozalid machine, is a non-alterable, easily read copy. It is made by copying directly from the requisition form onto a treated, preprinted form.

Purchase Orders by the Diazo Copying Process

By R. B. Gear
Director of Purchases, Commonwealth Edison Co.
Chicago, Illinois

SPEED and accuracy are important for any company handling about 200 purchase orders daily. Bottlenecks in the flow of the system from requisitioning to the final issuance of the purchase order can create costly delays as well as mere annoyances. At Commonwealth Edison Co., Chicago, we feel that we have established a system giving us a highly successful, cost-saving procedure.

Actually, by building our purchase order system around the use of an Ozalid machine (diazotype copying device), we have estimated a saving of nearly $25,000 per year in the cost of producing and handling purchase orders. This is not based so much on increasing the number of orders handled per day, but actually in the speed with which they are produced. Also, much less time is devoted to preparation and proofreading under the system than was required by our older technique.

As a background for our purchasing picture, Commonwealth Edison has established stores item numbers for about 108,000 different items. 20,000 of these are machine accounted, and are fast-moving items for general company use. The replenishment of this stock is a job of the Inventory Control Division of the Purchasing Department.

The remaining 88,000 items cover spare parts, materials and supplies for use by generating and sub-stations. Of these items, about 10,000 are quite active.

Before installing our new system, approved requisitions took anywhere from two to three days to pass through the procedures preparatory to the purchase order issuance. This delay factor was caused by operations involving typing, proofreading, sorting, reproduction, etc. Now, however, requisitions are processed into purchase orders and mailed out in two to three hours.

Another point contributing to the delay was the necessity of preparing extra copies not available in the snap-out type of purchase orders for complete distribution. All this has now been changed.

Since the Ozalid machine is the heart of our system, our requisition forms need to be only two part forms. The original part

In the Order Preparation and Mailing Section of the Purchasing Department, purchase order number, date, and repetitive clauses are entered by means of hand stamps.





Buying notations are entered on the translucent original of the requisition form by hand.

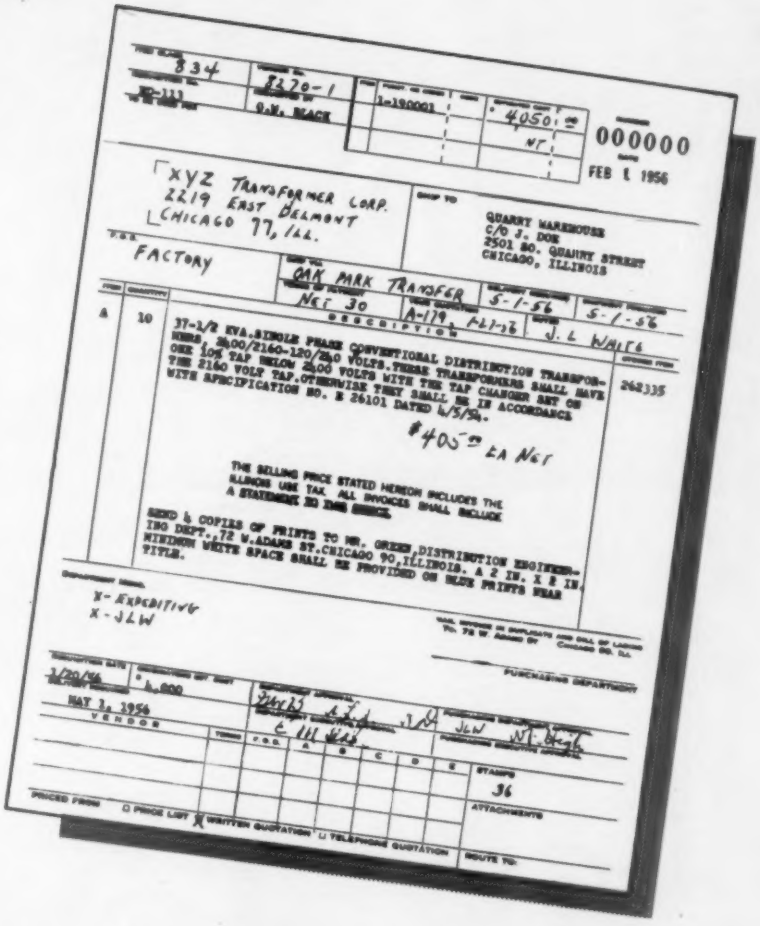
is a translucent form and becomes the means of creating the purchase order copies on the diazo machine. The second copy, an opaque carbon copy, is the file copy for the originating department.

The simplicity and accuracy of the system can be easily understood by pointing out that proofreading the requisition is the only proofreading required in the entire procedure. It works out as follows:

Part of the requisition form is filled out by the originating department. The form then goes through the "chain of command" for approval. Once this is done, the original of the form is passed on to purchasing.

In purchasing the form is processed and given to the interested buyer. Here, additional information is hand printed on the form. This is information such as price, terms, delivery, vendor's name and address, etc. After the buyer has finished filling in the form, it is passed on for purchasing departmental approval.

Then, the purchase order number, date, repetitive clauses, etc., are inserted by rubber stamps. The form is now ready for the preparation of the purchase order.



The completed requisition, ready for final processing and copying on the Ozalid machine looks like this. Typed matter was inserted in the originating department. Handwritten notations were inserted in the purchasing department. And, stamped data was inserted by an order preparations clerk.

The requisition and various preprinted Ozalid forms are sent through the diazo machine, creating the proper number and types of copies. These are permanent copies and cannot be altered in any way. Once they are turned out by the machine, the forms are ready for distribution.

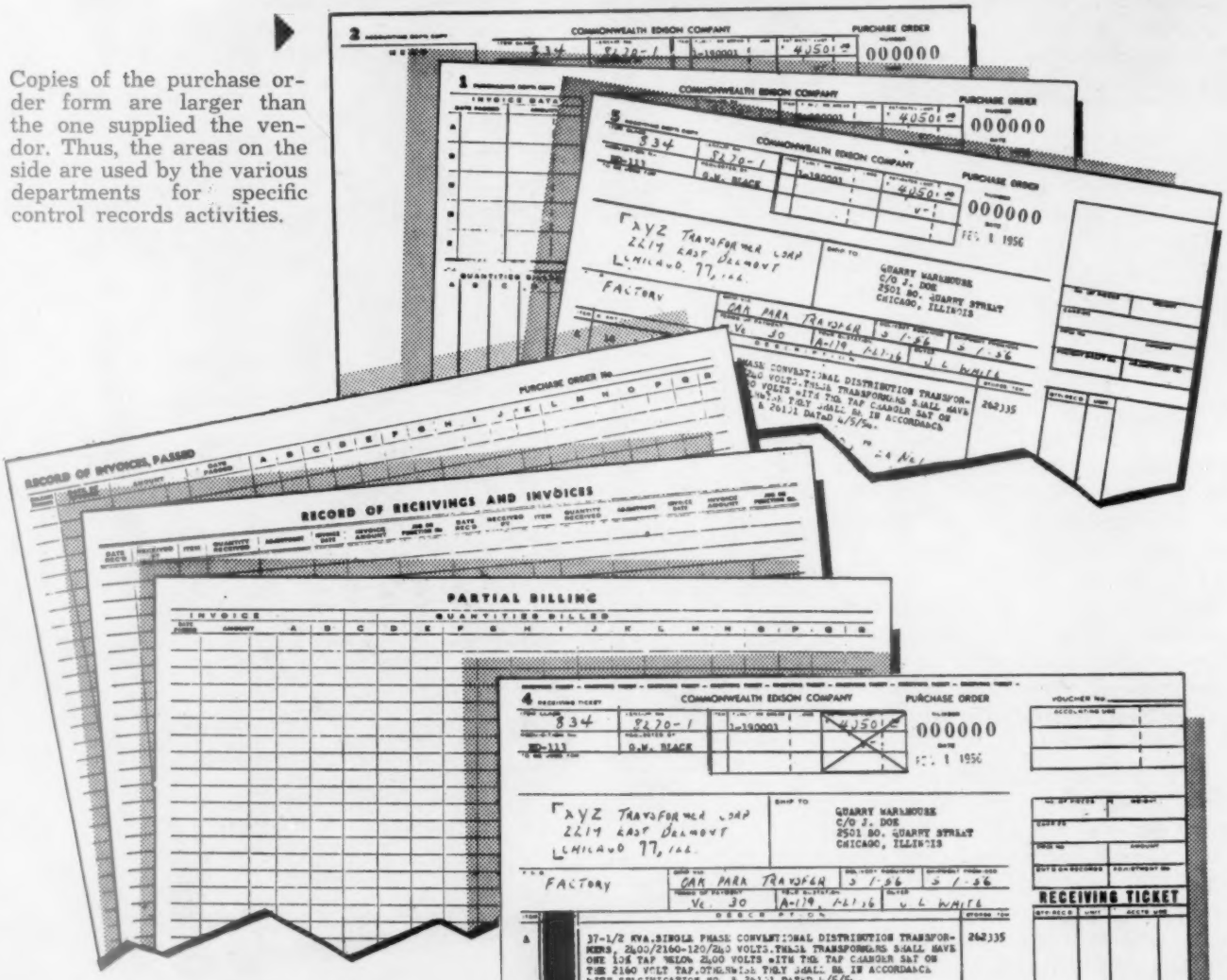
In addition to the copy for the supplier, the following internal distribution is used: purchasing department, accounting department, receiving ticket, receiving department, originating department, purchase record copy, fol-

(*Please turn to page* 190)



The translucent copy of the requisition and the various forms making up the complete purchase order are fed into the Ozalid machine. Each separate copy of the form requires an individual feeding of the requisition and the form through the machine. Thus, a requisition passes through the machine nine times to create Commonwealth Edison's complete purchase order form. Less than one minute is needed to accomplish this.

Copies of the purchase order form are larger than the one supplied the vendor. Thus, the areas on the side are used by the various departments for specific control records activities.



Three of the distributed forms have special recordkeeping material recorded on the reverse side. From top to bottom; accounting department, originating department, and purchasing department.

The receiving ticket copy made by the diazo machine shows how preprinted, blocked-out areas can be used in the process. Note also that with the information provided in the side area, the receiving ticket is absolutely complete in needed information.

Purchase Orders

low-up copy, and extra copies as required, including those for multiple shipment destinations.

All in all, there are nine copies made for each purchase order. And, most important of all, each copy is as clear and legible as the original. Also, they are made on a heavier, more durable stock than could possibly be used if the forms had to be made by carbon.

Since the forms are partially preprinted, the back of some of them, and side areas of others are used for various recordkeeping activities. Thus, each copy of the purchase order form is a complete, self-contained record for the department to which it has been distributed.

We are most pleased with the success of our purchase order operation. It is extremely efficient and has proved valuable not only from the dollar savings it has produced, but from the general improvement of the overall operation of our purchasing department.

Personnel Changes

Five offset sales supervisors have been named by **Ditto, Inc., Chicago.** Robert W. Hines will supervise offset sales in Wisconsin, Minnesota, and North and South Dakota. Jack N. Cowan will cover Texas, Louisiana, Arkansas and Oklahoma. Frank M. O'Connel will handle Illinois and northern Indiana. Gerald Kiefer will handle sales outside the New York City area in New York. And, Herbert W. Blomquist will cover Washington, D. C. Virginia, and parts of Maryland and West Virginia.

Royal Typewriter Co., New York, has announced four appointments in the sales organization of its Office Typewriter and Supplies Department. W. H. Lewis, formerly western regional sales manager, is now assistant manager of the department. V. F. Baumhefner, formerly Oakland district manager, takes over as western regional sales manager. H. C. Draper is now manager, sales administration. And, W. W. Conlin, succeeds Mr. Baumhefner as district manager at Oakland.

Prominent Users of Strathmore Letterhead Papers: No. 121 of a Series

The design of the new red, white, and gold Philip Morris package was decided upon only after exhaustive consumer and market tests.





No change in **Quality!**

While preserving quality and tradition a good reputation can frequently be enhanced by adding a modern approach. The new Philip Morris letterhead, for example, continues to appear on a Strathmore Paper to retain the dignity of the past in its simple and contemporary design. Consider your own letterhead. Does it convey your company's reputation in a modern manner? Has it the expressiveness inherent in Strathmore quality? Let your supplier help you make the wise change-over to a more up-to-date letterhead design on Strathmore paper!

Philip Morris Incorporated, long one of the leading cigarette manufacturers (Philip Morris, Parliament, and Marlboro), recently adopted a new design for its Philip Morris package. Developed coincident to an improvement in tobacco blend, the new package was created to appeal to modern design tastes and merchandising techniques, as was the radically changed Marlboro package introduced about a year ago.

STRATHMORE LETTERHEAD PAPERS: STRATHMORE PARCHMENT, STRATHMORE SCRIPT, THISTLEMARK BOND, ALEXANDRA BRILLIANT, BAY PATH BOND, STRATHMORE WRITING, STRATHMORE BOND. ENVELOPES TO MATCH CONVERTED BY OLD COLONY ENVELOPE CO.

STRATHMORE THIN PAPERS: STRATHMORE PARCHMENT ONION SKIN, STRATHMORE BOND ONION SKIN, STRATHMORE BOND AIR MAIL, STRATHMORE BOND TRANSMASTER.

STRATHMORE

Makers of Fine Papers

STRATHMORE PAPER COMPANY, WEST SPRINGFIELD, MASSACHUSETTS

For More Information Circle No. 270 on Inquiry Card—Page 17

office equipment and supplies

A new line of **executive and secretarial desks** featuring reversible tops, service pedestals and



cabinets on casters is being marketed by **The Taylor Chair Co., Bedford Ohio.** It has been called "The Transformation Group".

Circle No. 65 on Inquiry Card—Page 17

Positive **margin adjustment** for copy alignment and a slotted drum for systems blockout work have been added to the D-11 electric duplicator of **Ditto, Inc., Chicago.** By turning a knurled wheel on the duplicator drum, the master can be raised or lowered ½-inch. A pointer on the drum indicates the relative position of master to copy paper. The slotted drum accommodates magnetic blockout strips. These are used in sysems work to prevent portions of information on the master from appearing on certain forms.

Circle No. 66 on Inquiry Card—Page 17

Changes in scheduling through quick adjustment of cards and signals is possible with the aluminum Sched-U-Graph board made by the **Remington Rand division of Sperry Rand Corp., New York.** A 16-page catalog (KD-777) is available outlining the features of the equipment.

Circle No. 67 on Inquiry Card—Page 17

The Alwac III-E, a low-cost, medium speed, high capacity, **electronic digital computer** is now



in quantity production, according to **Logistics Research, Inc., Redondo Beach, Calif.** The new computer is designed to pick-up two instructions simultaneously, and operates by punched cards, magnetic tape, or automatic typewriter.

Circle No. 68 on Inquiry Card—Page 17

Sylvania Electric Products Inc., New York, has announced a new type **projection lamp** for motion picture and slide projectors. Known as Tru-Focus, it will burn in any position, including horizontal or base down. It is only four inches high, including socket. Lamps inserted into new sockets used with the lamp, automatically snap into perfect prefocused alignment. A new grid screen in the lamp directs air flow and prevents blistering of the glass or blackening of its surface.

Circle No. 69 on Inquiry Card—Page 17

Labelon Tape Co., Inc., Rochester, N. Y., has announced a new self-sticking, plastic protected **in-**



dexing tab for use on looseleaf sheets and dividers, bound books, acetate protectors, file folders, etc. Each Labelon tab packet contains four strips exactly six inches long, which can be cut to any desired size. They are available with borders in red, black, green, blue and yellow.

Circle No. 70 on Inquiry Card—Page 17

A price tagging machine that automatically prints price, tax and code information on tags is



being marketed by **Victor Adding Machine Co., Chicago.** Called the Mark-O-Matic, it operates like an adding machine and may be used for gummed labels, string tags and pin tickets. Set-up like a full keyboard adding machine, it has additional features: a special carry-over key that X's non-taxable items for easy identification; retail price keys; tax and information title keys (price per pair, price each, etc.); cost code keys; and an automatic operation lever for quantity printing of labels.

Circle No. 71 on Inquiry Card—Page 71

The Colitho Division, Columbia Ribbon & Carbon Mfg. Co., Inc., Glen Cove, N. Y. has released a new **catalog** on Colitho Offset Duplicating Plates and Supplies. The catalog is sub-divided into five sections, each dealing with a specific group of Colitho offset supplies. Copies may be obtained from Columbia Ribbon & Carbon Mfg. Co., Inc., Colitho Division, 350 Herbhill Rd., Glen Cove, N. Y.

Circle No. 72 on Inquiry Card—Page 17

A dual purpose plate for reproduction has been announced by **Remington Rand, a division of Sperry Rand Corp., New York.** The Plastiplates have an exceptionally receptive surface so important in xerography, and also double for conventional direct image work. They permit the erasure of unwanted images and the typing of additional copy even after the xerographic fusing process has taken place.

Circle No. 73 on Inquiry Card—Page 17



Colorbrite

writes in vivid, intense color with little pressure. Leads are strong *and* smooth—take and hold really sharp points. 26 High-Visibility colors.

NEW! Red and Blue colors are now made in 3 degrees of hardness.

Trademarks Reg. U. S. Pat. Off.

Since 1849

EBERHARD FABER

For More Information Circle No. 271 on Inquiry Card—Page 17

office equipment

An exceptionally small, light, and **compact dictating and recording machine** has been announced



by **SoundScriber Corp., New Haven, Conn.** Called the SoundScriber 200, it weighs only 6 lbs., and is 2-⅞" high, 6-¼" wide, and 10" long. Designed as a portable machine, it can be carried by a convenient handle, or worn over the shoulder by using a snap-on strap. It will fit into a brief case, suitcase, automobile glove compartment, or the top drawer of a desk. The microphone, power cord and a supply of discs are all contained within the instrument case. It records on green, mailable plastic discs that can be played back on any standard 33-1/3 rpm record-player, as well as SoundScriber's standard transcribing machines. With the use of an inverter, the 200 can be plugged into the cigarette lighter outlet of an automobile. Recording time is eight minutes of dictation on SoundScriber's 3" memo discs, and the 3-⅞" disc holding 15 minutes of dictation.

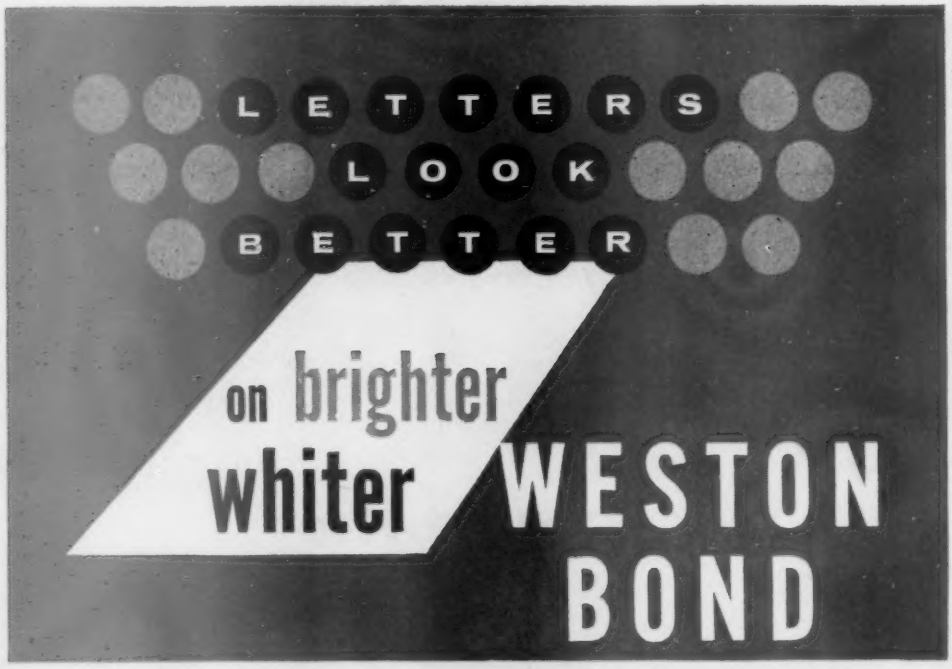
Circle No. 74 on Inquiry Card—Page 17

Microfilming—Three case histories. CH-1028 tells how the City of Norfolk, Va., used Remington Rand's Business Services Department and RR microfilming equipment to solve records keeping and storage problems. Equipment used was Film-a-record, AO reader, film storage cabinets and Microdex system of filing. CH-1031 is how Southern California Gas Co. used Film-a-record in tabulating department for filming each month's bills and punched cards. CH-1015 explains use of Kard-a-Film by Maytag Co. in keeping thousands of inactive records available for reference through microfilming and filing. All three case histories are available from **Remington Rand Division, Sperry Rand Corp.,** 315 Fourth Ave., New York 10, N. Y.

Circle No. 75 on Inquiry Card—Page 17



A compact and easily operated **general purpose computer** has been announced by **Librascope, Inc., Glendale, Calif.** Called the



Brighter, whiter Weston Bond makes letters look neater, cleaner, more impressive. It's a rag content paper made better by Weston for service and economy. Ask your printer to use it. Available in colors and matching envelopes.

Write for Sample Book, Address Dept. PN

WESTON PAPERS · PROTECT YOUR RECORDS ·

BYRON WESTON CO.
DALTON, MASSACHUSETTS

Makers of Fine Papers for Business Records Since 1863

For More Information Circle No. 272 on Inquiry Card—Page 17



Who's Got That Jones Estimate?

Tearing the hair only makes for ulcers. Keep your papers filed the Acco way and stay happy. Your estimates, orders, correspondence, invoices—*all* your business records—are always where you want them, when you want them, when you use Acco-press Binders or Accobind Folders in your files. Made of durable pressboard (choice of 5 colors) to last and last. Loose-leaf binding at a low price. Sizes to fit all your needs—and to bind from a single sheet to a six inch pile. Acco equip your files now. Ask your stationer.



ACCO PRODUCTS, Inc.
Ogdensburg, N. Y.
In Canada: Acco Canadian Co., Ltd., Toronto

For More Information Circle No. 273 on Inquiry Card—Page 17

LGP-30 General Purpose Computer, it is smaller than the average desk yet has a relatively large memory capacity. Its memory unit, a magnetic drum, stores 4096 words, 31 bits (30 binary digits plus sign) in length, along 64 tracks around the drum's circumference. Maximum access time for any given word is 17 milliseconds. It can add, subtract. multiply, divide and make decisions as instructed by internally stored programs. Input and output is through a connected Flexowriter, an electric typewriter equipped to produce and operate from punched paper tape. For operation, it is plugged into a standard 115-volt, 60-cycle outlet, and does not require air conditioning or any special installation.

Circle No. 76 on Inquiry Card—Page 17

An **electric time recorder** designed to furnish accurate and indisputable payroll and cost records of employee's time is being marketed by **Simplex Time Recorder Co., Gardner, Mass.** Called the model KCF, it can be set for either trigger trip or touch plate registration. Printed cards or paper of any size can be used with the machine.

Circle No. 77 on Inquiry Card—Page 17



Columbia Ribbon & Carbon Mfg. Co., Inc., Glen Cove, N. Y., is marketing a new **hand cleaner.** Called "Clean Hands", it will remove practically every office stain—from offensive carbon smudges to hectograph stains. It comes in an 8-oz. unbreakable polyethylene squeeze bottle.

Circle No. 78 on Inquiry Card—Page 17

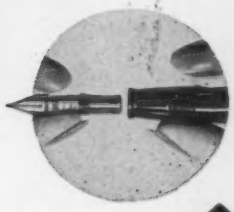
The Pen That Fills Itself!

Always Ready to Write





Choose the right point for the way you write —by number.



Writes for months without refilling!

Base holds 40 times more ink than an ordinary fountain pen. Pen refills itself by capillary action every time you return it to base. You're *always ready to write!*

And you can choose from more than 30 point styles the one just right for the way *you* write. Try America's most popular desk pen yourself—on a 30-day money-back guarantee.



DESK PEN SETS BY

Esterbrook®

CAMDEN 1, N.J. • 92 FLEET ST. EAST, TORONTO

For More Information Circle No. 274 on Inquiry Card—Page 17

VELVET CROSSED THE PEN AND PENCIL

TRADE MARK



to bring you today's new writing tool for the office

Leading firms across the country are equipping their offices with the new VELVET ball PEN·cil because:

- it combines the best features of pencil and ball point pen
- wood barrel has lighter feel of a pencil for top writing comfort
- improves record keeping, lowers costs, raises efficiency in every department
- nothing to press, click or turn
- finest ball point mechanism
- no point to break, wear down or sharpen
- ink supply lasts for months

3 styles for every writing job:

- Regular. For all general-purpose writing. Blue, black, red or green ink. $3.00 per dozen.
- Super Fine. For shorthand and extra-fine writing, for accountants, bookkeepers. Blue, black, red or green ink. $4.20 per dozen.
- Liquid Velvet. For economical, fluid "lead pencil" writing . . . and erasability. $3.25 per dozen. Sold only through commercial stationers and selected stationery departments. Order today!

Prices slightly higher West of Rockies



Buy the economical dozen packs

VELVET ball PEN·cil

nothing writes like a Velvet

Write for sample on your office letterhead.

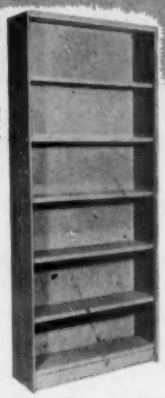
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For More Information Circle No. 275 on Inquiry Card—Page 17

FRONTIER STEEL Office® Equipment

Quickly recognized as the efficient way of permanently modernizing any office, Frontier equipment is built to last and adjust to different floor plans.

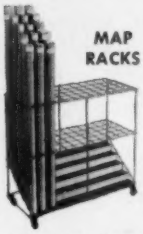
Write for Catalogue.



BOOK CASES



UTILITY TABLES



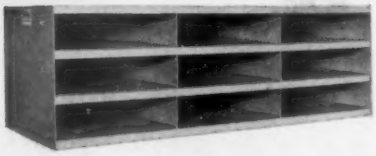
MAP RACKS

SORTING CASES

FRONTIER

Manufacturing Company

P. O. Box 13266
Dallas, Texas



For More Information Circle No. 276 on Inquiry Card—Page 17

GET MORE OUT OF PURCHASING

Put your own name on the mailing label that delivers PURCHASING Magazine . . . and see how much more you'll get out of the contents.

See how much you'll gain by having time to really digest the material written just for you.

A personal copy should always be handy for easy reference—ready to help you when you need it.

Order a personal subscription now—$4. a year. Write to PURCHASING Magazine, 205 E. 42nd Street, New York 17, N. Y.

office equipment

Xerography—Case history on use of xerography by Gerber Products Co. telling how office forms, standard practice bulletins, reports, letters, engineering drawings, etc., were produced at savings up to 33-1/3%. Available from M. E. Harris, Dept. GF40, The Haloid Co., Rochester 3, N. Y.

Circle No. 79 on Inquiry Card—Page 17

Translating punched-card data into printed form—Folder describes use of Remington Rand Alphabetical Tabulator in getting printed data from punched-cards for job costs, machine loading schedules, invoices, payroll checks, etc. Folder "Alphabetical Tabulator" TM-933 available from Remington Rand Division, Sperry Rand Corp., 315 Fourth Ave., New York 10, N. Y.

Circle No. 80 on Inquiry Card—Page 17

Pencil selection guide—Selector tells how to choose correct pencil for every job. Explains fundamentals of quality, degrees of hardness, and economy of black and colored pencils. Available from Eagle Pencil Co., 703 E. 13th St., New York, N. Y.

Circle No. 81 on Inquiry Card—Page 17

Intercommunications—Case history on how company uses internal, company - owned dial phone system to speed communications. Available from J. A. Webber, Automatic Electric Sales Corp., 1033 W. Van Buren St., Chicago 7, Ill.

Circle No. 82 on Inquiry Card—Page 17

Carbon paper and typewriter ribbons—How fine carbon paper and typewriter ribbons are made is told in new booklet. First section covers carbon paper processes. Fabrics, ink formulae, and processing operations for ribbons are treated in second section. Copy of "Secrets of Superiority" available from Buckeye Ribbon and Carbon Co., 7209 St. Clair Ave., Cleveland 3, Ohio.

Circle No. 83 on Inquiry Card—Page 17

EXECUTIVE SWIVEL ARMCHAIRS



65 executive posture chair. Luxurious proportions. Deep foam rubber cushions. Designed for the top man. $197.25



1800B executive swivel armchair. Answer to the need for low price with full measure of traditional Harter quality. $64.00

CHECK THIS GUIDE TO CHAIR STYLES

This is just a sampler! There's a Harter Model for every office chair need! Matching side chairs are available for use with all Harter executive swivel armchairs.

SPRING-BACK CHAIRS



57-S is typical of the Harter "Comfit" line that also includes saddle seat styles and models with tubular steel bases. $52.75

RIGID-BACK POSTURE CHAIRS



26 secretarial posture chair. Easy handwheel controls. Quality construction at only $26.90

All prices slightly higher South and West

SALES CHAMP



C-1500 swivel armchair. More executives have found comfort in this than any other office chair. Clean masculine lines. $81.50

HARTER STEEL CHAIRS



NEW informative booklet, "Posture Seating Makes Sense," tells what you want to know about modern executive seating for efficiency, comfort and good health.

Harter Corporation
429 Prairie St., Sturgis, Michigan

Send illustrated literature and name of nearest Harter dealer: ☐ "Posture Seating Makes Sense" —Executive Chairs, ☐ Reception Room, Conference Room Chairs, ☐ Stenographic Chairs.

Name_____

Address_____

City_____ State_____

For More Information Circle No. 277 on Inquiry Card—Page 17

association news

Cleveland Ass'n. Ready for Convention in May



BIG THREE in convention planning are, left to right: Glenn Hackett, Thompson Products Co., general convention chairman; George A. Renard, N. A. P. A. executive secretary-treasurer; and A. O. Anderson, president of the Cleveland Association and convention co-chairman.

The 474 members of the Purchasing Agents Association of Cleveland are ready to play host to PAs from 84 other local Associations May 20-23 for the 41st Annual National Association of Purchasing Agents Convention. They'll have to work hard to live up to the reputation they've established. Cleveland was host to the Convention in 1950 and many PAs recall how well the affair was run. It was also host in 1934 and 1923.

According to William J. McKenzie, news editor of the Midwest Purchasing Agent, "It's A Lot of Work Planning an N.A.P.A. Convention." In a release with this title, Mr. McKenzie says, "Anyone who has ever had a hand in preparing for a National Purchasing Convention will tell you it is a lot of fun and a lot more work!"

Heading the 1956 convention committee is Glenn Hackett of Thompson Products. Co-chairman is Arnold O. Anderson, Cleveland Association president. Program chairman is William

(*Please turn to page* 209)

Why You Should Attend The 1956 NAPA Convention

by
A. W. Soell, President
National Association of Purchasing Agents

To the purchasing executive who is seriously interested in his own advancement and in serving his company to the best of his ability, the N.A.P.A. Convention and Inform-A-Show have always offered unequaled opportunities.

Judging from the caliber of the committee members responsbile for this year's convention and the efforts they have made to plan a program of interest to every segment of the purchasing profession, the three-day meeting to be held next May in Cleveland promises to be one of even greater than usual value.

All of us in purchasing recognize the importance of education, of self-improvement, of keeping abreast of new developments and new ideas if we are to measure up fully to the responsibilities that are ours in an increasingly competitive economy.

I know of no way in which a purchasing agent can gain more in the way of information, instruction and ideas than by participating in the various convention work sessions related to his fields of interest and by exchanging information and ideas informally with his colleagues in purchasing.

In addition to the opportunities it provides each member to gain knowledge that will help him to do a better job, attendance at the convention offers each of us an opportunity to contribute information and ideas from our own experience that will help to advance the purchasing profession.

In summary, attendance at the 1956 N.A.P.A. Convention in Cleveland on May 20-23 provides opportunities to help yourself, your company and your profession.

"You Get Extra Battery Performance -



America's Finest!
GOULD
Industrial Truck Batteries

The MATERIAL HANDLING INSTITUTE'S EXPOSITION
Cleveland, Ohio
PUBLIC AUDITORIUM
JUNE 5th THRU 8th
1956
mhi
EXHIBITOR
Booth 1425

THANKS TO GOULD FIELD ENGINEERING SERVICE!"

It's a proven fact that regular, systematic battery care can add months, perhaps years, to the life of a battery! Gould's nation-wide Field Engineering Service enables *you* to get the benefit of this added service . . . and lower your over-all battery power costs.

Your Gould Field Engineer's one job is to see that you get maximum service from your batteries. He is factory-trained to instruct your own men as to correct maintenance routines and to help set up a simple record system for anticipating battery needs.

There's a Gould Field Engineer in your area. He's as near to you as your telephone. Call him. And when you see him, ask him for the new Gould Plus-Performance Plan material for your battery maintenance staff.

Always Use Gould-National Automobile and Truck Batteries

GOULD
Batteries

GOULD-NATIONAL BATTERIES, INC.
TRENTON 7, N. J.

"BETTER BATTERIES THROUGH RESEARCH"

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For More Information Circle No. 278 on Inquiry Card—Page 17

Cylindrical Roller Bearing Inner Races



Their vital importance in bearing performance . . . advantages of carburizing . . . the manufacturing procedures which assure maximum quality and life

The function of an inner race is to provide a fatigue-resistant surface between a shaft and the rollers of an anti-friction bearing. Because of the geometry of a roller bearing, there is a smaller area of contact between the inner race and rollers than there is between the outer race and rollers.

This smaller area of contact has the effect of concentrating the loads on the inner race to a greater degree. Therefore, the inner race is always the critical member of a roller bearing from a fatigue life standpoint. When the inner race is the stationary member and the outer race rotates, this load concentration on the inner race is even more of a factor since the maximum load is repeatedly applied at one point.

Adequate resistance to relative movement between the inner race and shaft is vital to satisfactory performance. HYATT inner races are made of materials chosen to permit relatively heavy press fits. When HYATT press fitting recommendations are followed, the inner race becomes an integral part of the shaft for all practical purposes.

1. WHY CARBURIZING?

HYATT inner races are made of a good *carburizing* grade of steel, rather than through-hardened steel, for several reasons. First, carburizing permits the vital heavy press fits referred to above. Second, tough flanges that will not break out under impact can be obtained on carburized races with no loss of case hardness. Third, carburizing improves load-carrying capacity, as shown in Diagram A. During quenching, the phase change from austenite to martensite which occurs in the outer case is accompanied by a volumetric change; but the low carbon core remains tough and ductile *without* appreciable volumetric change. The result is a tendency to stretch the core and compress the case. Due to the Poisson effect, *the compressive hoop stresses in the external fibres build up the load-carrying capacity of the race.*

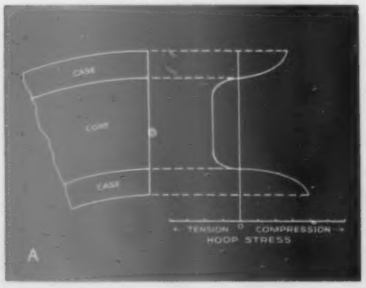
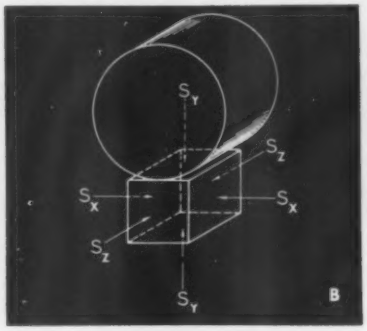


Diagram B shows a typical element of a HYATT carburized inner race under roller load. Stresses in the "Z" direction are negligible. Stresses in the "X" direction are compressive hoop stresses or preload. Stresses in the "Y" direction are compressive stresses due to the load. Without the compressive stress Sx (hoop stress) the load-carrying capacity would be less; and should the stress in the "X" direction become a tensile stress due to pressing a through-hardened race on a solid shaft, the capacity would be still further reduced. Reference to applicable theories of material failure will support this view and indicate why HYATT has gone to substantial added expense to give customers the benefits of carburized inner races.



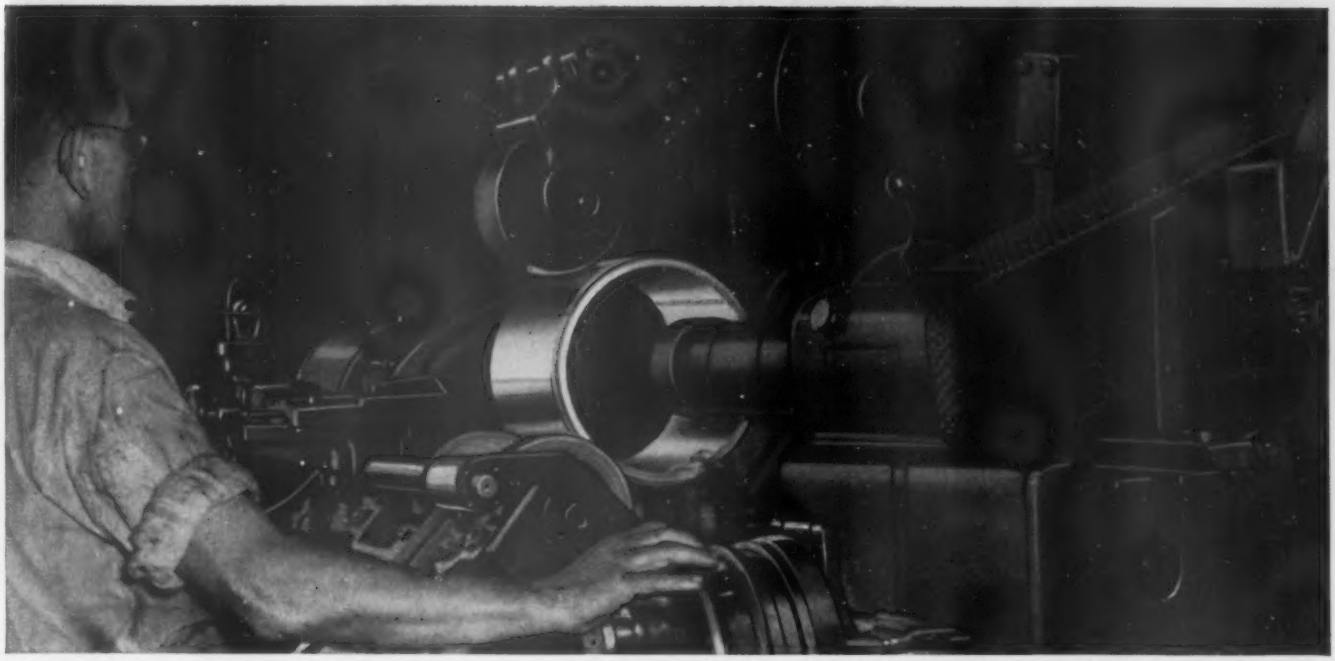
2. OPERATIONAL REQUIREMENTS

A top-quality inner race should have all the following characteristics:

1. *Minimum wall variation:* Concentricity of the inner race pathway to bore is necessary for quiet operation at full bearing capacity.
2. *Minimum runout of race ends to bore:* The bearing must not be cocked on the shaft by location against a square shoulder with a race end having excessive runout.
3. *Minimum runout of race flange inner faces to bore:* Excessive flange face runout results in noisy operation and hunting of the shaft.
4. *Minimum bore tolerance:* An important fitting consideration. If all the available tolerance is taken in the race bore, the shaft tolerance is unnecessarily restrictive.
5. *Minimum pathway and bore taper:* Taper causes uneven roller loading with resultant overheating and poor life.

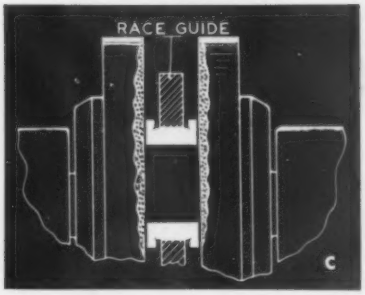
3. MANUFACTURING PROCEDURES

Good control of primary machining is reflected in good quality of the finished product. The early stages of manufacture, through the heat treating operation, are highly important and are all scrupulously controlled by HYATT. In this article, however, the *finishing operations* are of primary interest and will be discussed in detail.



Centerless grinding operation on a large Hyatt inner race.

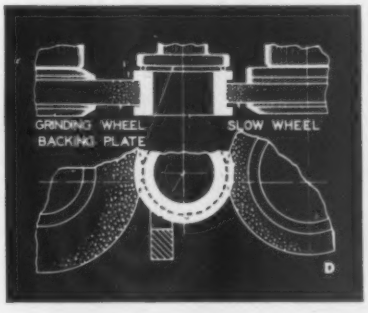
4. DOUBLE END GRIND



The sequence of grinding operations is important. The ends must first be faced off *square and parallel* so that during subsequent operations the ends can be used as accurate reference. The HYATT double end grind operation illustrated in Diagram C insures excellent control of race end parallelism.

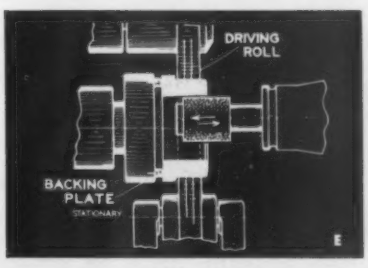
5. CENTERLESS PATHWAY GRIND

The centerless grinding principle was pioneered by HYATT many years ago. This method was a significant improvement over existing chucking methods because it eliminates excessive wall variation introduced by spindle and chucking errors.



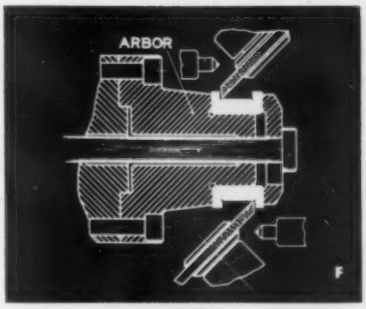
The race pathway is ground by the centerless method to produce a race with as nearly a perfectly round diameter as is commercially practical. Two-point and three-point out of round as well as taper are held to a minimum. Note that the work is rotated with a backing plate against the previously ground end, as shown in Diagram D.

6. CHUCKLESS BORE GRIND



Here again the centerless method is employed to generate an inner diameter (bore) concentric with the outer diameter (pathway.) This is accomplished by driving the race on the outer diameter and positioning the grinding wheel relative to the drive roll. The result is maintenance of minimum wall variation by removing stock from the high spots as they pass between the drive roll and the grinding wheel, as shown in Diagram E.

7. FLANGE GRINDING



All flange faces must be ground to run true with the roller pathway. Since the pathway and bore have been ground using the ends as a reference, the ends are also used as reference while grinding the flange faces (Diagram F). This establishes all-important even contact with the roller ends during operation of the bearing.

8. VIGILANT INSPECTION

Strict inspection is vital to the maintenance of high-quality standards in a precision product such as roller bearings. Working with the finest test equipment under conscientious supervision, highly trained HYATT inspection teams constantly watch the quality of HYATT parts as they are produced. This insures traditional HYATT dependability.

YOU WILL FIND FURTHER DETAILS

in HYATT General Catalog No. 150, or your nearby HYATT Sales Engineer will gladly help you choose the type of cylindrical roller bearings best suited to your design requirements. Remember, HYATT is America's *first* and *foremost* maker of roller bearings. Hyatt Bearings Division of General Motors Corporation, Harrison, New Jersey.

GM GENERAL MOTORS

HYATT ROLLER BEARINGS

For More Information Circle No. 279 on Inquiry Card—Page 17

New York Purchasing-Sales Dinner Big Success

About 950 purchasing agents and salesmen got together for the annual Purchasing-Sales Dinner of the Purchasing Agents Association of New York. The meeting was held in the grand ballroom of New York's Commodore Hotel. Guest speakers were George A. Renard, executive secretary-treasurer of N. A. P. A. and W. C. Stolk, president, American Can Co. Honored guests of the Association at the head table included: John Collins, director, Sales Executives Club of New York; J. D. Ardleigh, executive vice president, Research Institute of America; R. A. Whitney, president, National Sales Executives, Inc.; W. A. Foster, president, Sales Executives Club of New York; and J. W. Fox, vice president, Sales Executives Club of New York.

The subject of Mr. Renard's talk was "From One PA to Another." In his customary able and witty fashion, Mr. Renard commented on general business and economic conditions. He warned PAs and sales executives of the danger of inflation putting the damper on the current boom. He also expressed concern over the growing volume of consumer debt.

The subject of Mr. Stolk's talk was "Progress Through Obsolescence." The theme of the talk was that we improve business "by deliberately making obsolete the things we make or use, our processes and techniques and our industrial know-how."

According to Mr. Stolk, "planned obsolescence could not possibly exist without research." "In fact," he continued, "it is research in its many forms—basic, or fundamental, applied research, merchandising, advertising, and consumer research, and the very vital day-to-day research carried on by sales, manufacturing, purchasing, engineering, and other departments of any progressive company."

"How does all this affect the purchasing agent and the salesman," Mr. Stolk asked. "Generally speaking, neither the purchasing agent nor the salesman need become a scientist, but both must know how the various types of research can help them do a better job. Each must know his own company's research capacities and its plans."

Mr. Stolk told the PAs and salesmen that a company he knows of maintains "field researchers" in its purchasing department. According to Mr. Stolk, "these men spend their full time scouring not only their own industry but allied and competing industries, searching constantly for new products, new materials, and new processes they can recommend to management to deliberately obsolete their present operations."

Mr. Stolk concluded his talk by saying that progress demands that planned obsolescence continue to develop more and better products. Purchasing can do its part in contributing to progress.



← **PA AND PRESIDENT—The Purchasing-Sales Dinner was also "Bosses' Night" for A. O. Degling, vice president—purchasing, American Can Co. Reason: Company President William C. Stolk was guest speaker. At the pre-meeting reception are, left to right: Bill Rae, George Renard, Mr. Stolk, Mr. Degling, and Association President Ed Krech.**



LUCKY HOWARD AHL—The assistant secretary of N. A. P. A. got a carnation pinned on by Katherine Seibert of the New York Association office. The "assistant pinner" is Lillian Laurence, purchasing agent, Slater Electric & Mfg. Co. →

For More Information Circle No. 280 on Inquiry Card—Page 17→



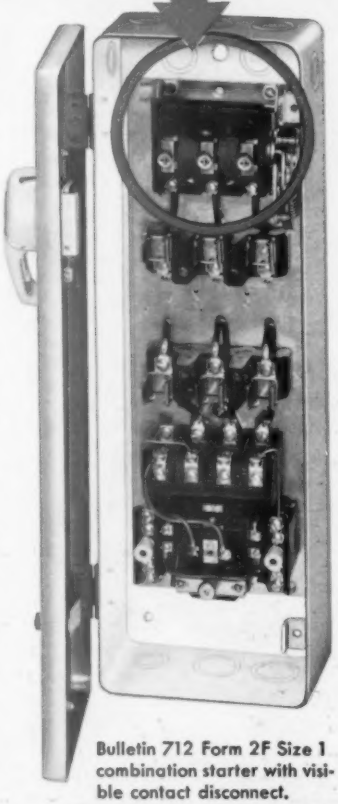


NEW! The first disconnect switch with movable contacts that are plainly visible in the OFF position

Allen-Bradley has finally succeeded in producing a disconnect switch, which removes all doubt whether the movable contacts are in the "open" or "closed" position. When in the "open" position, they are plainly visible—as open; when in the "closed" position, they are dropped—out of sight in the arc hood.

The moving, double break contacts of the new disconnect (shown in yellow above) move horizontally in individual arc chambers. When the disconnect is CLOSED, the moving contacts are DOWN in the arc chambers. In the OPEN position the moving contacts are UP in plain view, as shown in the colored illustration directly above.

If a contact should stick or weld, it will fail to rise to its "open" position and thereby indicate that the respective "link" remains closed—a plainly visible warning signal to the maintenance man.



Bulletin 712 Form 2F Size 1 combination starter with visible contact disconnect.

A unique feature of the new line are the interlocks built into the disconnect lever.

First—the disconnect lever is interlocked with the door latch so that the door cannot be opened unless the lever is in the OFF position. This assures that the starter is "dead" when the cabinet is open and is safe to inspect.

Second—the disconnect lever has a concealed release pin used only by authorized persons for opening the cabinet door, if needed, without shutting down the motor.

Standard operating lever permits use of one to three padlocks to lock in "off" position, but also can very simply be changed to permit padlocking in "on" position.

These new Bulletin 712 combination starters are available in NEMA Type 1, 4, 7, 9, and 12 enclosures. They are listed from 1 to 100 hp, 220 v; 200 hp, 440-550 v.

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis. • In Canada—Allen-Bradley Canada Ltd., Galt, Ont.

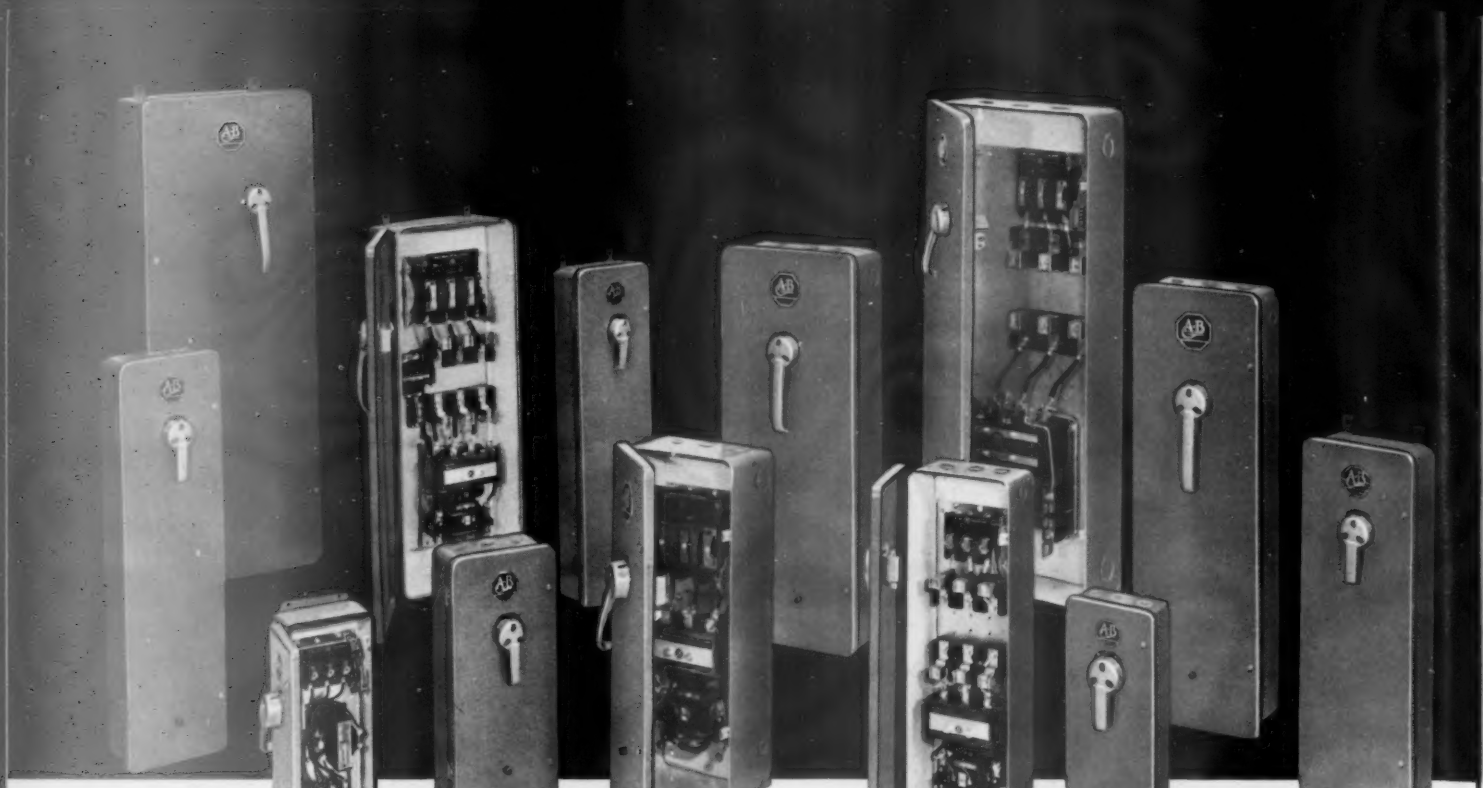
A-B

ALLEN-BRADLEY

TROUBLE FREE MOTOR CONTROLS

QUALITY

4-56-MR

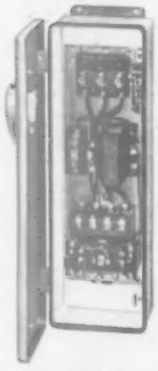


A New Line

OF BULLETIN 712 COMBINATION STARTERS

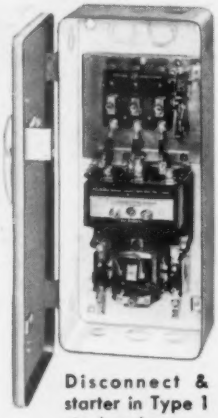
Allen-Bradley announces a modernization of its Bulletin 712 combination starters that should meet with the instant approval of plant "safety" organizations. The cover cannot be opened unless the operating lever is in the "off" position; also the movable disconnect contacts are **plainly visible** when this switch is "open." A welded or sticking contact can be detected instantly. The new operating lever contains a concealed latch pin which permits the maintenance man to open the cabinet without opening the disconnect and stopping the motor. Disconnect switch can be padlocked with three locks—in the open position. It can be arranged for padlocking in running position.

SIZE 1



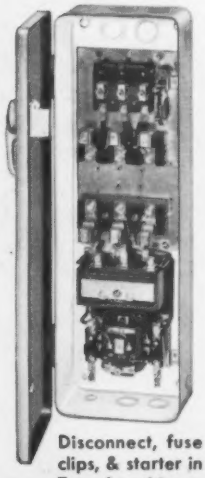
Disconnect, transformer, & starter in Type 12 cabinet.

SIZE 2



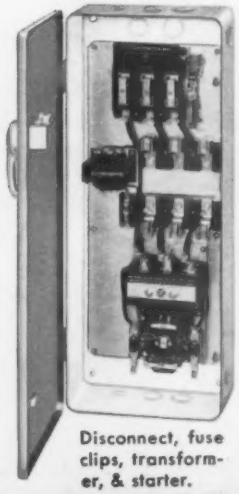
Disconnect & starter in Type 1 steel enclosure.

SIZE 2



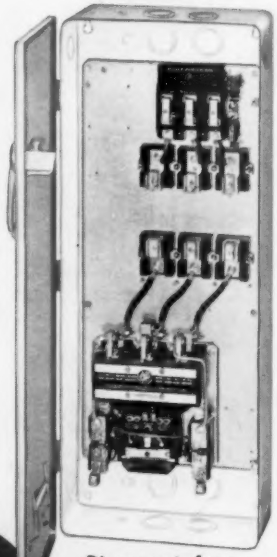
Disconnect, fuse clips, & starter in Type 1 enclosure.

SIZE 3



Disconnect, fuse clips, transformer, & starter.

SIZE 4



Disconnect, fuse clips, & starter in Type 1 enclosure.

Allen-Bradley Co.
1316 S. Second St.
Milwaukee 4, Wis.

In Canada—
Allen-Bradley Canada Ltd.
Galt, Ont.

ALLEN-BRADLEY

QUALITY

TROUBLE FREE MOTOR CONTROLS

A-B Quality

4-56-MR

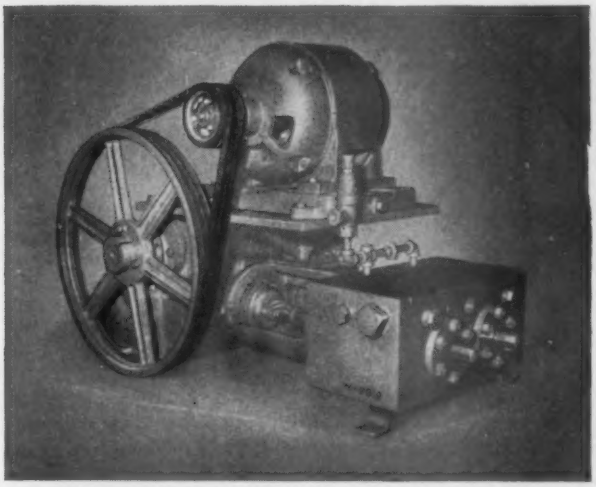
Why specify one sheave instead of another?



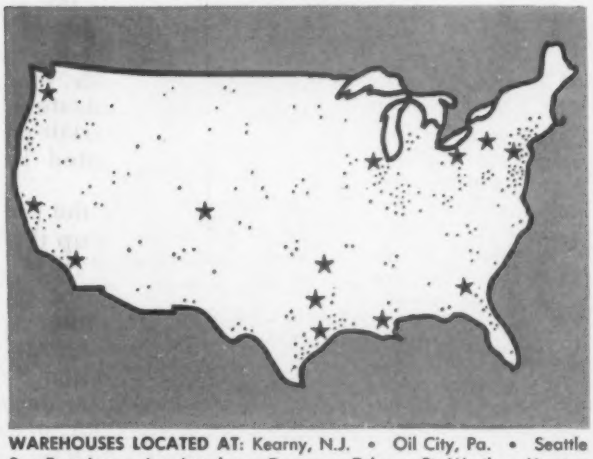
TAKE A CLOSE LOOK at this cutaway view of the Worthington QD — the *original* two-piece sheave. See how unique two-piece construction makes it easy to get on, easy to get off. But its heavy-duty split-tapered-cone hub grips shaft tightly, holds fast under the heaviest shock loads.

Some folks seem to think there's no difference between sheaves. No matter who makes them or sells them, a sheave's a sheave and a V-belt's a V-belt. Period.

Not our users, though. They know *our* sheave (the Worthington QD) *is* different. More to the point, they know it's *better* than other sheaves. And easier to get, too. There are Worthington service outlets practically everywhere. Never any delays in stock shipment or service!



SCIENTIFIC DESIGN of QD sheaves not only provides more efficient transmission of power but actually adds to the looks of your product. What's more, I-beam construction of the QD driveN sheaves provides greater strength with less weight.



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PROMPT SHIPPING SERVICE. Thirteen factory warehouses with stocks covering over 100,000 V-belt drive stock combinations, from ½ to 600 horsepower, support over 250 stocking distributor outlets. These shipping centers can fill your requirements *fast*.



GOOD NEWS for purchasing men is free new 100-page "Master Engineering Manual" which makes sheave and V-belt selection as easy as falling off a drive shaft. Write for it today to Worthington Corporation, Mechanical Power Transmission Division, Sect. MV.5.6, Oil City, Pa. MV.5.6

WORTHINGTON

BUY THESE WORTHINGTON STANDARD PRODUCTS FROM YOUR LOCAL DISTRIBUTOR

Compressors • Pumps • Multi-V-Drives • Variable Speed Drives

For More Information Circle No. 281 on Inquiry Card—Page 17

North Jersey Ass'n Gets N.A.P.A. Charter

Presentation of its charter from the National Association of Purchasing Agents featured the fourteenth dinner meeting of the Purchasing Agents Association of North Jersey, on February 8. A record crowd of more than 300 attended the ceremonies in the Robert Treat Hotel, Newark.



Highpoint of the meeting was the presentation of the charter by N.A.P.A. President Soell, right, to Association President Fred Esser.

A moving message of welcome from Fred C. Esser, Jr., president of the North Jersey Association, and one of its founders, opened the affair. Mr. Esser declared that there was little he could say beyond a fervent "thank you" for the great help that the officers of the new unit had received from many members and friends. "This is a joyful day," he said, "and a proud one." He promised that the association would go forward with new strength from its official affiliation with N.A.P.A., and try to make as great contributions to purchasing history as had some of the older chapters.

Special greetings to the association from Governor Robert Meyner were conveyed by Charles F. Sullivan, director, Purchase and Property, State of New Jersey. Mayor Leo Carlin, of Newark, sent his regrets at being unable to attend because of the pressure of official business. He promised, however, that he would shortly attend some future meeting of the association, which he commended for its contribution to the economic and social life of the city.

Wilson B. Wight, N.A.P.A. vice president for District 8, officially welcomed the association to the district. He praised it for its pioneering spirit, and pointed out that N.A.P.A. is anxious to see the development of new chapters when they have shown that they can attract the right number of members who are willing to adhere to N.A.P.A. principles and ideals.

A. W. Soell, president of N.A.P.A., congratulated the association on receiving its charter and went on to describe the organization and services of N.A.P.A. and what they mean to individual members. He tied in the aims of N.A.P.A. with the general economic situation and with competition in particular. Mr. Soell also presented the Certificate of Affiliation to the association. The certificate was accepted by Mr. Esser.

The inscription on the program for the evening sums up the story of the association and its founders so well that we reprint it here:

"In the summer of 1954, ending years of speculation regarding the need for an organization of purchasing agents in New Jersey, a small group of N.A.P.A. members conducted a survey of New Jersey industries not already represented and found that such a need did exist.

"The organization meeting, October 6, 1954, resulted in an amazing attendance of 110 prospects—and 56 signed applications! From this small but encouraging beginning the P.A.A. of North Jersey has grown to an organization of more than 300 members, whose enthusiasm and interest augurs well for the future.

"For the P.A.A. of North Jersey this is Charter Night. To the small group mentioned — Fred Esser,

(*Please turn to page* 210)

What size is a quality fastener?



Here are two ELASTIC STOP® nuts.
Each has the familiar red locking collar. Each is self-locking, vibration-proof and can be reused many times. Each is a fast, readily assembled one-piece unit . . . will maintain accurate adjustment anywhere on a bolt. Each will afford positive protection against thread corrosion . . . prevent liquid seepage along bolts. Each is manufactured in quantity. Each is exactly controlled as to quality of raw material, finished dimensions, class of thread fit, seat squareness and finish. Each has a record for precision and uniformly high performance that is unmatched.

But . . . one measures 1/10 inch across the flats; the other, 4 inches. Between these two, there are more than 530 different hex nuts in the ESNA line. They are the result of variations in height, material, finish and size.

Look to ESNA for the top quality self-locking fastener that fits your need best.

ELASTIC STOP NUT CORPORATION OF AMERICA

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Elastic Stop Nut Corporation of America
Dept. N58-415 2330 Vauxhall Road, Union, N. J.
Please send the following free fastening information:

☐ ELASTIC STOP nut bulletin ☐ Here is a drawing of our product. What self-locking fastener would you suggest?

Name_____ Title_____

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For More Information Circle No. 282 on Inquiry Card—Page 17

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a good name to GO with

in *Welding*



...M & T offers these vitals for sound welds: Murex Arc Welding Electrodes, AC and DC Machines, Inert-Arc Equipment, selected Welding Accessories, Thermit and Equipment . . . and gamma ray Radiographic Equipment for inspection and testing.

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...UNICHROME is M & T's label for quality processes and materials for chromium, bright nickel and copper plating . . .chromate finishes and organic coatings.

Stocks and warehouses are conveniently located across the country . . . technical experts will be glad to help.

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For More Information Circle No. 283 on Inquiry Card—Page 17

association news

PAs Told Iowa To Be a Coastal State



Members of the Central Iowa Ass'n. with perfect attendance include, left to right: Al Rempp, Bob Sampson, Fuzz Dimer, Don Foster, "Mac" McDonald, Matt Karpan, Warren Gerstenkorn, Dan Cook, and C. W. Clauser.

At the regular meeting of the Purchasing Agents Association of Central Iowa, held at the Hotel Kirkwood on Tuesday, February 14th, at the Hotel Kirkwood, Des Moines, a revealing insight was afforded into the impact of the St. Lawrence Seaway on the economy of the State of Iowa. The guest speaker of the evening was Harry C. Brockel, port director for the City of Milwaukee. He outlined Iowa's relationship to the seaway and pointed out that through Great Lake ports Iowa lard and other farm products will be shipped directly to European markets, while Iowa will be able to secure through the Great Lakes many manufactured goods at a saving in transportation costs. At the Education Forum, preceding the regular meeting, "Buying Patterns" were discussed under the leadership of of chairman, Art Minor.



Officers of the Central Iowar Ass'n. are, left to right: Alvin Rempp, secretary; Fuzz Diemer, treasurer; Herb Lubke, vice president; W. L. Howlett, president; R. L. Sampson, vice president: and G. R. Barcus, past president and national director.



Listening attentively to the speaker, Mr. Harry C. Brockel, are, left to right: O. W. Diemer, Warren Gerstenkorn, and Matt Karpan.

1956 NAPA Convention

(*Continued from page 198*)

Adams of Republic Steel Corp. Mr. Adam's appointment by Messrs. Hackett, Anderson, and National Executive Secretary-Treasurer George Renard was confirmed by the N.A.P.A. Executive Committee last month.

One of the highlights of the convention is, of course, the Inform-A-Show. It's handled nationally by George Renard and his staff. In Cleveland the local committee, which will be responsible for erection and dismantling of exhibits, etc., is headed by Larry Curren.



PROGRAM CHAIRMAN of the convention is William T. Adams of Republic Steel Corp.

Another big job is entertainment—especially for the Early Bird Dinner. This year it falls on Frank DeCrane of Lamson & Sessions Co. Merle Miller of The George Washington Co. is chairman of the Early Bird Dinner and the Banquet. He is responsible for selection of the menus after the caterer has been selected—and all the many miscellaneous arrangements incident to a banquet for several thousand people.

The list of Cleveland Association members who have important jobs to do in making the convention a success is by no means exhausted. W. Dale Kimmell of Standard Products Co. will be in charge of the program for the ladies. William R. Toward of Lincoln Electric, first vice president of the Association, will serve as chairman of the reception committee. Mr. Toward and his cohorts have the job of making out-of-town guests feel at home and helping them in any way they can.

Another important job is that

(*Please turn to page 210*)

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for a bonus in

Welding



Something extra goes into the package when you purchase M & T welding equipment and supplies for your company . . . you get service and more of the weldors' needs from nearby M & T sales offices and authorized distributors—qualified technical assistance for your engineers and welders. To assure safe, efficient, economical output, specify MUREX® Electrodes . . . M & T Arc Welding Machines . . . M & T Cleaning Tools, Holders, Helmets, Connectors, Protective Clothing and other accessories . . . Equipment and Materials for Thermit® welding repair and construction . . . Kel-Ray® Projectors for industrial radiography. Get the dividends too—*M & T skill and service, as near as your telephone.*

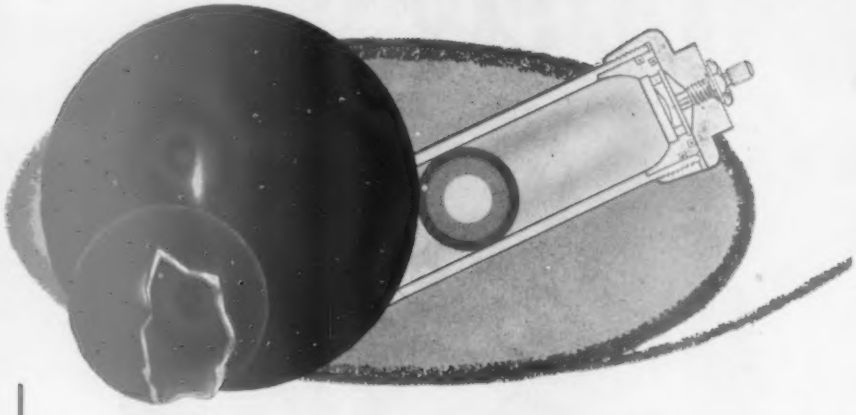
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For More Information Circle No. 284 on Inquiry Card—Page 17

THE SHAPE OF THINGS IN MOLDED RUBBER

RUBBER GETS ON THE BALL VIA
"APCOTITE" BONDING AND MOLDING TECHNIQUE



APPLICATION:

The rubber covered aluminum ball shown here is a piston in a hydraulic accumulator of revolutionary design. Advantages of a ball type piston are many. Being spherical and free rolling, no one point takes the wear, and it permits the accumulator to be operated in a horizontal position. Molded slightly larger than the cylinder in which it operates, it creates a perfect seal. The entire system and accumulator were designed and patented by a famous New England engineering firm.

PROBLEM:

Pressure within the cylinder caused the rubber on the sphere to flow and pull away from the aluminum surface of the ball. Customer asked Acushnet to produce a better bond and covering.

SOLUTION:

Acushnet engineers and lab chemists voted not to use pins or location rods of any kind to hold the ball in place while molding but elected to use a preforming mold prior to curing. The final curing of the rubber covering included the use of "APCOTITE," an exclusive Acushnet rubber-to-metal bond. The cross section shown here is proof that a uniform layer of rubber concentrically perfect was obtained on the aluminum insert.

Apcotite bonding to metal is exclusive with Acushnet and provides for high strength bond of rubber, synthetic polymers, silicone and plastics to all metals for the life of the part. Technical assistance at any stage of design is available from the Acushnet laboratories. Send for brochure describing Apcotite bonding in detail. Specify "APCOTITE"!

Acushnet

ACUSHNET PROCESS COMPANY
NEW BEDFORD, MASSACHUSETTS

... Precision Molded RUBBER, SILICONES - "APCOTITE" BONDING

Address all communications to 770 Belleville Ave., New Bedford, Mass.

For More Information Circle No. 285 on Inquiry Card—Page 17

1956 NAPA Convention

(*Continued from page* 209)

of chairman of the service committee. This year it's held by Chester Jones of Diamond Alkali Co. Mr. Jones' committee has the rather broad function of taking care of all details the other committees don't handle.

Fred Engle of Standard Oil Co. will be responsible for publicity as chairman of the press-publicity committee and will also be in charge of the press room at the convention. C. E. Carlson will watch expenditures at the convention in his capacity as convention treasurer.

According to Mr. McKenzie, "if each and every member who has a part in the big event, and its tremendous preparation in advance, puts their shoulders to the wheel and pitches in in a helpful way, after it is all over you will be among the many that have a satisfied feeling of something well done."

North Jersey Assocition

(*Continued from page* 206)

Walter Hoffman, Bill Gibson, Irene Gordon, Charlie Sherwood, and Larry Gardner—we of the P.A.A. of North Jersey extend our congratulations and our thanks."

Among the honored guests attending the meeting were: G. W. Howard Ahl, assistant secretary, N.A.P.A.; George Renard, executive secretary-treasurer, N.A.P.A.; Gordon Bass, president, Sales Executive Club of Northern New Jersey; Paul V. Farrell, managing editor, PURCHASING Magazine; Chester A. Fowler, national director, Central New York P.A.A.; Ernest J. Keyser, national director, P.A.A. of Philadelphia; Edward M. Krech, president P.A.A. of New York; J. H. Leonard, executive secretary, P.A.A. of New York; William J. Orchard, member of the executive board, Wallace & Tiernan; Harold I. Patten, executive secretary, P.A.A. of Philadelphia; Kemp Stevens, chairman, Educational Committee, 8th District, N.A.P.A.; E. F. Whitaker, national director, District of Columbia P.A.A.; Frank Whyte, secretary, 8th District Council, N.A.P.A.

Here's how you can help make stainless plate stocks go a LONG way...

Whenever demand outdistances supply you have problems. But any problem can be solved when all hands cooperate. If you keep in mind these "rules of the road" you will be able to add extra mileage to the supply . . .

1. If you have a D.O. rating, give it to your supplier—it helps him get the necessary nickel, and protects your position on his schedule.
2. If you are going to cut plate into smaller pieces, give your supplier the option of furnishing small pieces.
3. Plan ahead as much as possible, so your supplier has a reasonable chance to meet your delivery requirements.
4. If an alternate analysis or a slight variation in gage is acceptable, let your supplier know.
5. Buy "cut-to-shape" pieces and reduce your time and costs of handling scrap.
6. Clean out your stainless scrap so that it can get back into production.
7. Order only what you need in stainless plate—to exact size.

Put these simple rules to work . . . it will help you, and all of us, stretch the supply to the limit.

Stainless Steels Exclusively

G. O. CARLSON, INC.

Plate • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)

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For More Information Circle No. 286 on Inquiry Card—Page 17

For More Information Circle No. 287 on Inquiry Card—Page 17→

TEN WAYS G-E dry-type transformers



TYPE D TRANSFORMER



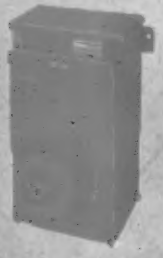
CONTROL TRANSFORMER



TYPE M TRANSFORMER

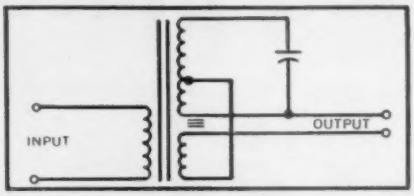


VOLTAGE STABILIZING TRANSFORMER



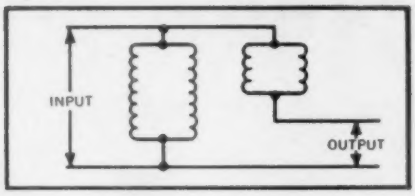
SATURABLE REACTOR

1. STABILIZE



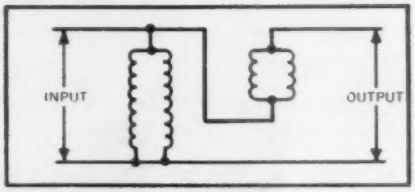
Solve fluctuating voltage problems with G-E voltage stabilizing transformers. Voltage to the load is stabilized to plus or minus 1%.

2. BOOST



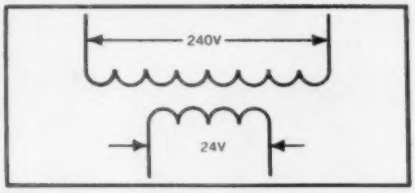
When excessive line drop robs motors and lights of rated operating voltage, boost the line voltage to the proper level at the load with G-E dry-type B-B transformers. Connected units for 5, 10, or 20% boost or buck.

5. BUCK



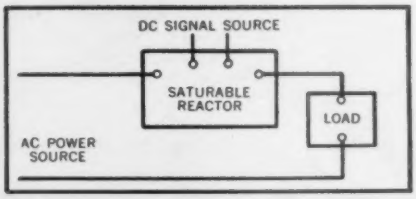
Higher than rated voltage at the load shortens equipment life and increases maintenance costs and down time. Install G-E B-B transformers to buck line voltage down to the proper level at the load.

6. CONTROL



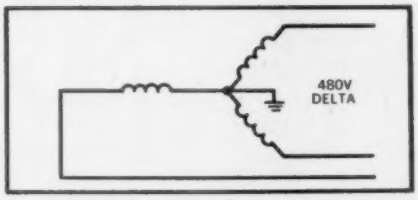
Furnish power for relays, solenoids, and pilot lights economically at the load. G-E control transformers in series-multiple and 50/60-cycle ratings reduces stocking problems.

9. REGULATE



G-E saturable reactors give stepless and wide range control of power to a variable voltage load. Isolated low power d-c control of the a-c circuit is provided economically right at the load.

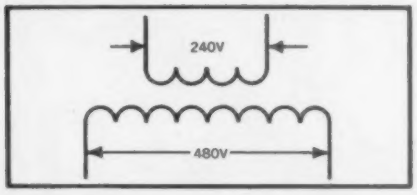
10. GROUND



Modernize ungrounded 480-volt delta systems and gain the fault protection and other advantages of grounded neutral systems by installing G-E dry-type zig-zag connected grounding transformers. Stable neutral point is provided for 277-volt lighting.

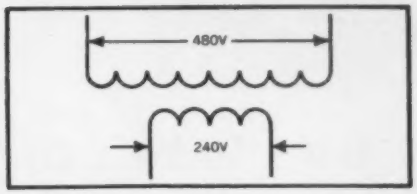
can help solve your voltage problems

3. STEP-UP



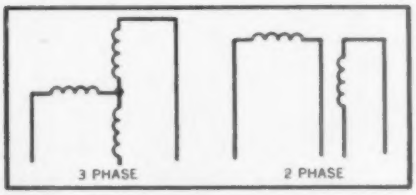
The capacity of inadequate wiring can be economically increased by installing G-E dry-type transformers to step-up line voltage to a higher level. Eliminates rewiring old systems or installing parallel systems.

4. STEP-DOWN



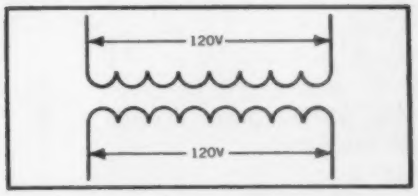
Distribute power economically at 600 or 480 volts and step-down to utilization voltages right at the load with G-E dry-type transformers. Reduces high distribution losses.

7. CHANGE PHASE



Provide power to operate existing 2-phase equipment from 3-phase systems or new 3-phase equipment from existing 2-phase systems. Transformation can be made economically right at the load.

8. ISOLATE



Solve grounding problems, prevent line disturbances from affecting the load, and load disturbances from affecting the line by isolating with G-E dry-type transformers.

SEND THIS COUPON TODAY FOR FURTHER INFORMATION

General Electric Company, Section D 410-20, Schenectady 5, N. Y.

Please send me the following bulletins:

- ☐ **GEA-5754, Voltage Stabilizing Transformers**
- ☐ **GED-2767, Control Transformers**
- ☐ **GEA-6354, Saturable Reactors**

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Company_____

Address_____

City_____ **State**_____

GENERAL ELECTRIC

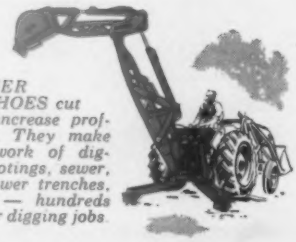


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WAGNER BACKHOES cut costs, increase profits too. They make short work of digging footings, sewer, gas, power trenches, graves — hundreds of other digging jobs.

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"WAGNER BUILT" MEANS "BETTER BUILT" FOR OVER 105 YEARS

For More Information Circle No. 288 on Inquiry Card—Page 17

association news

Houston Ass'n Inaugurates New Officers



No one was frowning at the Annual Inaugural Ball of the Houston Association. Among those with a part in the program are, left to right, seated: Frank L. Scott, Paul W. Berry, Charles O. Brotherton, and Haylett O'Neill, Jr. Standing are: P. E. Walker, C. Jim Stewart, E. F. Foster, W. P. Reeves, R. D. Benson, and Chas. W. Newman.

At the Annual Inaugural Ball, attended by 850 persons from the Texas Gulf Coast area, Paul W. Berry of Republic Supply Company was installed as the new president of the Purchasing Agents Association of Houston, Saturday night, February 25, at the Emerald Room of the Shamrock-Hilton Hotel. Mr. Berry succeeds Charles O. Brotherton, purchasing agent of Gulf Oil Corporation, who becomes National Director. E. F. Foster of Wyatt Metal & Boiler Works, becomes alternate national director. Other officers installed were: Frank L. Scott of Baker Oil Tools, Inc., as first vice-president; Haylett O'Neill, Jr., of Humble Oil & Refining Company, as second vice president; C. Jim Stewart of Stewart & Stevenson Services, as treasurer; and P. E. Walker of United Gas Corporation, as secretary.

The new local Directors are R. D. Benson of Brawner Paper Company, Chas. W. Newman of Hamilton Supply Company, and W. P. Reeves of Great Southern Life Insurance Company. Mr. Fran T. Fendley of Humble Oil & Refining Company was master of ceremonies at the meeting.

Lancaster PA Club Hear Motor Executive

A delicious steak dinner with all the trimmings was served at the regular February dinner meeting of the Purchasing Agents Club of the Manufacturers Association of Lancaster, Pa., held on Tuesday, 21st. Allen Curtis, Jr., Philadelphia Zone Manager, New Departure Div., General Motors Corp., was the guest speaker for the evening. He followed his entertaining address with two movie exhibits covering the General Motors Motorama and Powerama.

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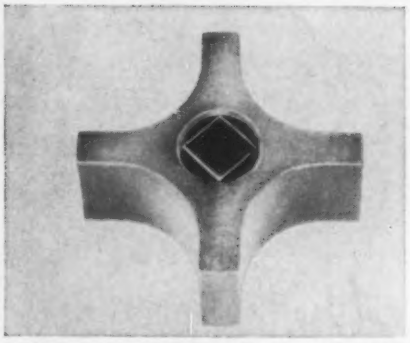
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PURCHASING NEWS

PROPERTY AND APPLICATION DATA
ON THESE VERSATILE ENGINEERING MATERIALS:
"ZYTEL," "ALATHON," "TEFLON," "LUCITE."

NO. 2, 1956

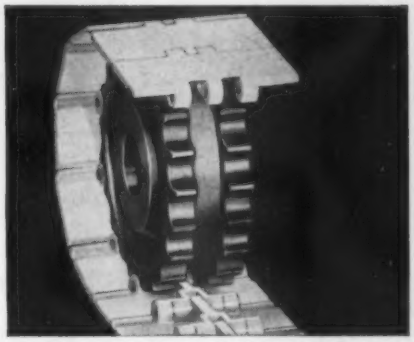
These properties of ZYTEL® nylon resin can help you reduce costs—increase productivity



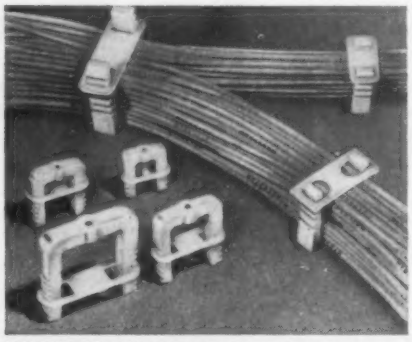
ABRASION-RESISTANT—One of six parts of "Zytel" used in the complicated and fast-running Mergenthaler Linotype machines is this assembler star. Utilized at points where abrasion resistance, impact strength and resiliency are required, these parts not only increase operating efficiency but also reduce downtime.



GOOD DIELECTRIC PROPERTIES—Conduit fittings of "Zytel" save the U.S. Navy about $31,000 per aircraft carrier. Fittings of "Zytel" form watertight seals, provide good dielectric properties, easy installation, lightness in weight and require no painting or welding. *(Molded by Danielson Mfg. Company, Danielson, Conn.)*



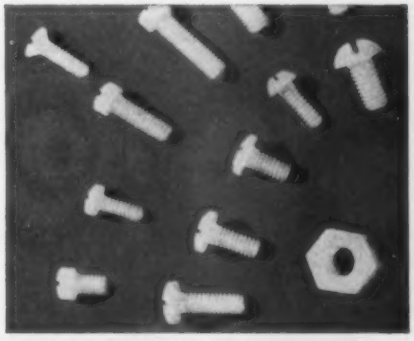
LITTLE OR NO LUBRICATION—Little or no lubrication is required in conveyor chains of "Zytel." Chains operate more quietly, have longer life. Initial cost is lower than many conventional flat-top chains. Its light weight reduces power requirements. *(Manufactured by Chain Belt Company, Milwaukee 1, Wis.)*



SOLVENT- AND CHEMICAL-RESISTANT—The fuel resistance of "Zytel" makes these Type-U clamps particularly valuable in aircraft and automotive wiring. They eliminate tying wire bundles; cut costs by speeding application and reducing tool requirements. *(Manufactured by Dakota Plastics Company, Compton, California.)*



READILY MOLDED INTO COMPLEX SHAPES—"Zytel" simplifies production, lowers costs and increases serviceability of shower head. "Zytel" resists hard-water minerals, and assures years of trouble-free service. *(Shower head by Nylon-Maid, Inc., Glendora, Cal. Parts by Rainbow Plastics, El Monte, California.)*



HEAT-RESISTANT—250°F. temperatures do not affect these precision-machined fastenings of "Zytel." The fastenings are lightweight, durable and may be colored for coding. *(Manufactured by Anti-Corrosive Metal Products Co., Inc., Castleton-on-Hudson, N. Y. Supplied by Polymer Corporation, Reading, Pa.)*

BECAUSE of its unique combination of properties, "Zytel" nylon resin can do a better job for you in a variety of industrial applications. It can be molded into light, tough, resilient mechanical parts—gears, cams and bushings, requiring no lubrication. The mechanical strength and heat resistance of "Zytel," coupled with good insulating characteristics, give outstanding results in electrical applications. "Zytel" features good form stability and resistance to most solvents and chemicals. Parts made of "Zytel" can be drilled, sawed, threaded or punched. It will pay you to investigate Du Pont "Zytel" for your own use.

NEED MORE INFORMATION?

Clip the coupon for additional data on the properties and applications of this Du Pont engineering material.

**"Zytel" is the registered trademark of E. I. du Pont de Nemours & Co. (Inc.)*

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Room 374, Du Pont Building, Wilmington 98, Delaware.
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I am interested in evaluating this material for_____

Name_____ Position_____

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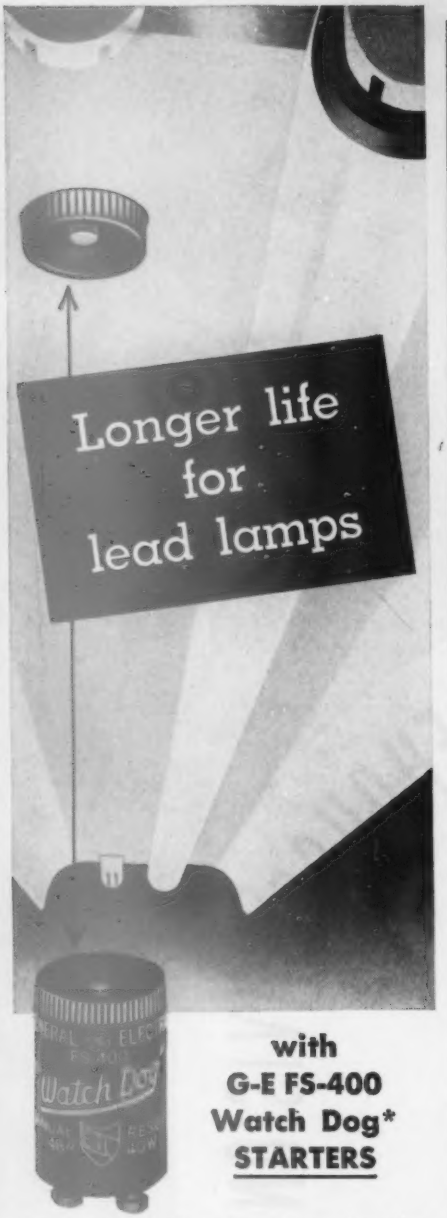


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with G-E FS-400 Watch Dog* STARTERS

In most two-or-three-lamp fluorescent fixtures the life of the lead lamp is shortened by voltage surges occurring before the lamp cathodes are adequately preheated. The new G-E FS-400 starter has a special glow-lamp switch which assures proper preheat of these lead-circuit lamps.

As a result, this premature burnout of lead lamps is prevented. Maintenance costs are reduced and group relamping programs are made even more practical.

This new FS-400 starter, in addition, offers all the other advantages of G-E Watch Dog starters. It automatically cuts failing lamps out of operation, protecting ballasts and fixture wiring and eliminating lamp blinking. During relamping, it eliminates the usual "waiting" period and speeds up the relamping job. And, one Watch Dog starter will outlast up to ten ordinary starters! Wiring Device Department, General Electric Company, Providence 7, R. I.

*Registered Trade-mark of General Electric Co.

GENERAL ELECTRIC

For More Information Circle No. 291

←For More Information Circle No. 290

association news

1956 Should Be Good Year Says Kodak Economist

Dr. Harold C. Passer, economic analyst with Eastman Kodak Company, was the speaker at a recent meeting of the Purchasing Agents Association of Rochester, Inc. held at the Rochester Club.

In discussing the subject "The 1956 Business Outlook," Dr. Passer expressed the opinion that the present year would rank with 1955 as one of the best in the economic history of the United States.

Dr. Passer, who, previous to his coming with Kodak three years ago, was a teacher of economics at Princeton, reviewed the present business situation and with that as a stepping stone developed his forecast on the outlook for 1956.

With a $400 billion economy in 1955, the speaker cited present business activity at a capacity level, unemployment at a very low point, and actual shortage in only a few important materials. Consumer spending is at an all time high figure with December of last year showing an increase over December 1954 about 10%. Consumer income, including salary and dividends, is the highest in history with the year 1955 showing an upturn of about 5½% over 1954. Dr. Passer stated that there was **every reason to expect increased consumer income in 1956 for several reasons: a probable round of wage increase because of labor contracts, new minimum wage increase in March, continued high earnings of industry in general, probable reduction in income tax in 1956.**

Dr. Passer anticipates an increase in the labor force of the country of 600,000 in 1956, or 1% more than last year. Experience over the years has shown that greater manpower will add to labor productivity and that we can expect an overall potential increase in total supply of from 3 to 4%. Therefore, we should have a continued good balance between supply and demand.

Concluding, Dr. Passer expects that prices will be stabilized in 1956. Credit and money will be fairly tight and hold business in balance thereby eliminating the danger of run away inflation and restraining demand to what the economy can support. Dr. Passer did not discount the possibility of slight corrective recessions, but such periods should be of short duration and will not effect a long term of years of expansion.

President William T. Naylon introduced the speaker.

Kalamazoo Ass'n. Meets

Members of the Kalamazoo Valley Association of Purchasing Agents enjoyed a colored film with sound on the care and use of electric motors presented by the United States Electrical Motors, Inc. entitled "Rhapsody In Speed" at a recent meeting. John Seaburn, purchasing agent, for the Kalamazoo Mill Supply Company also gave a very interesting commodity discussion on mill supplies.

Then, Paul Ernst, Purchasing Agent, for the Borroughs Mfg. Co. gave a resume of his company's activities under "What's My Line." Meeting was conducted by Robert Johnson, President of the local group.

For More Information Circle No. 292→

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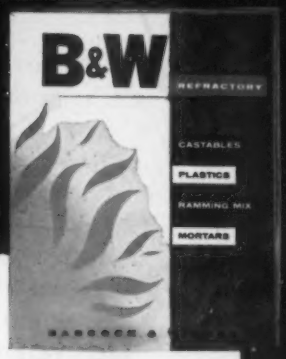


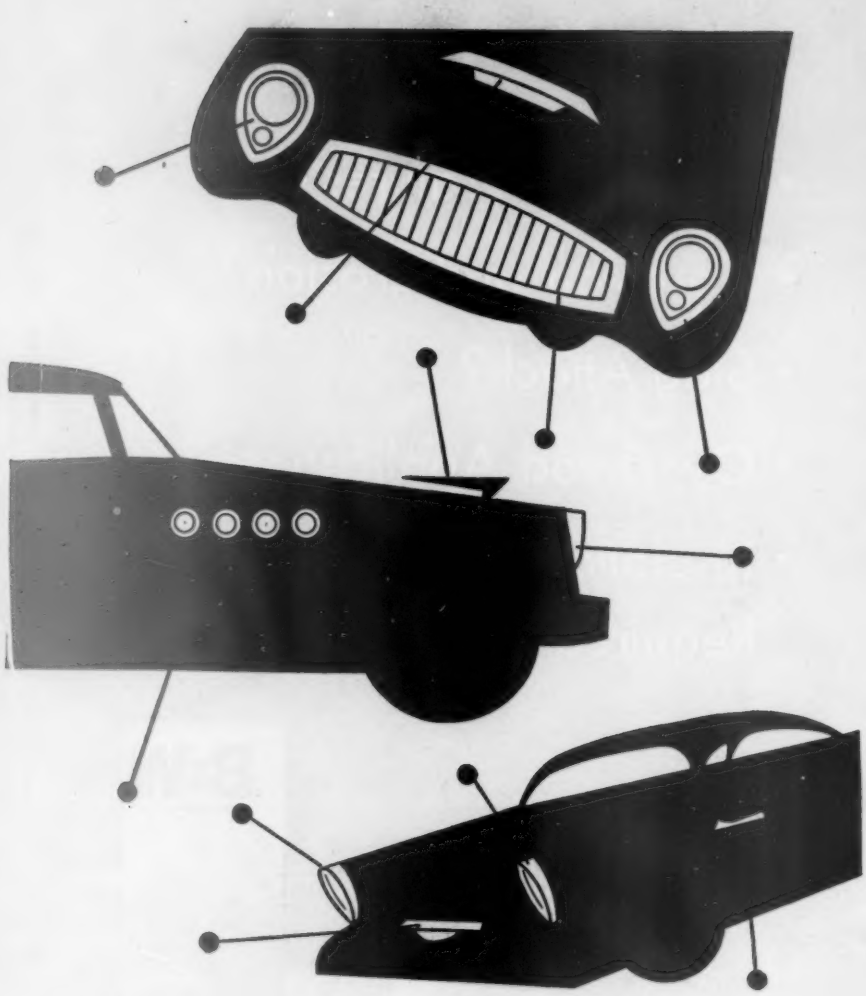
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association news

New Orleans Adds New Members

At the regular February dinner meeting of the Purchasing Agents Association of New Orleans, held at the St. Charles Hotel on Monday, the 20th, the following were voted into membership: Edward J. North of Todd Shipyards Corp.; Walter E. Johnson of Dixie Machine & Welding Co. and Robert E. Haberland of Kaiser Aluminum & Chemical Co. The program for the meeting was sponsored by the Standardization Committee. C. C. Sisk, purchasing agent for American Zinc of Tennessee and also chairman of standardization committee for the Seventh District, gave an excellent discussion of the advantages of standardization. He was followed by L. E. Tinnell, assistant to the vice-president in charge of purchasing for the Lion Oil Company of Little Rock, Arkansas. Mr. Tinnell gave some excellent pointers on public relations.

Twin City Greets Its New Execs

The meeting held on Wednesday, February 8, at the Radisson Hotel was the first opportunity the Twin City Association of Purchasing had to greet its newly elected officers, committee chairman and members. The new president is William F. Bloedow; v.p., M. R. Hendricks; treasurer, Wayne Hamlett and secretary, C. A. Berg. After introduction of the new officers, there was a film exhibited (courtesy of Aluminum Co. of America) entitled "This is Aluminum." Two evenings later, the association held a most successful dinner party and dance at the Southview Country Club, in St. Paul, Minn.



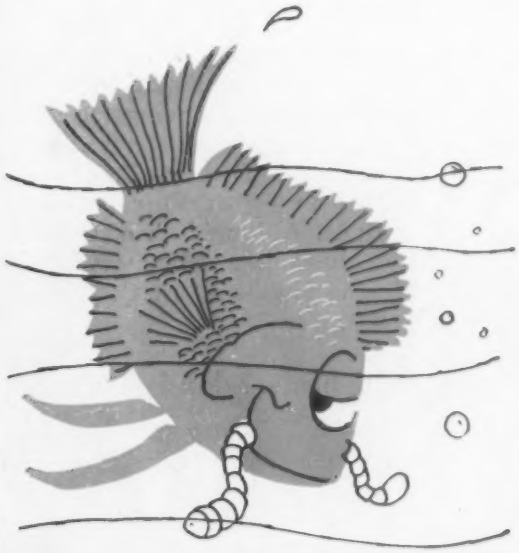
in fishing, all you can lose is the fish...

There's a lot of evidence to prove that we get just about what we pay for in this world, whether it's fishing tackle or lubricants.

When we sacrifice quality in the Isaac Walton department, the loss is usually limited to fish. But a compromise with quality in lubricants can be costly. It can result in excessive wear, down time, and needless maintenance expense. In any case, the costs of faulty lubrication are far greater than the small savings possible through the purchase of unsuitable lubricants.

When you think of quality lubricants, think of Gulf. The tough film, outstanding rust preventive properties, and excellent stability of Gulf lubricants are your assurance of efficient, continuous machinery performance. In fact, many plants have found that through the use of Gulf Quality Lubricants they have saved more than enough to pay the entire bill for oils and greases!

Remember too that Gulf provides the cooperative counsel of experienced engineers to help insure the proper application of the right lubricants for every unit of equipment and operating condition. Consult the telephone directory for the number of your local Gulf office and have a Gulf Sales Engineer call.



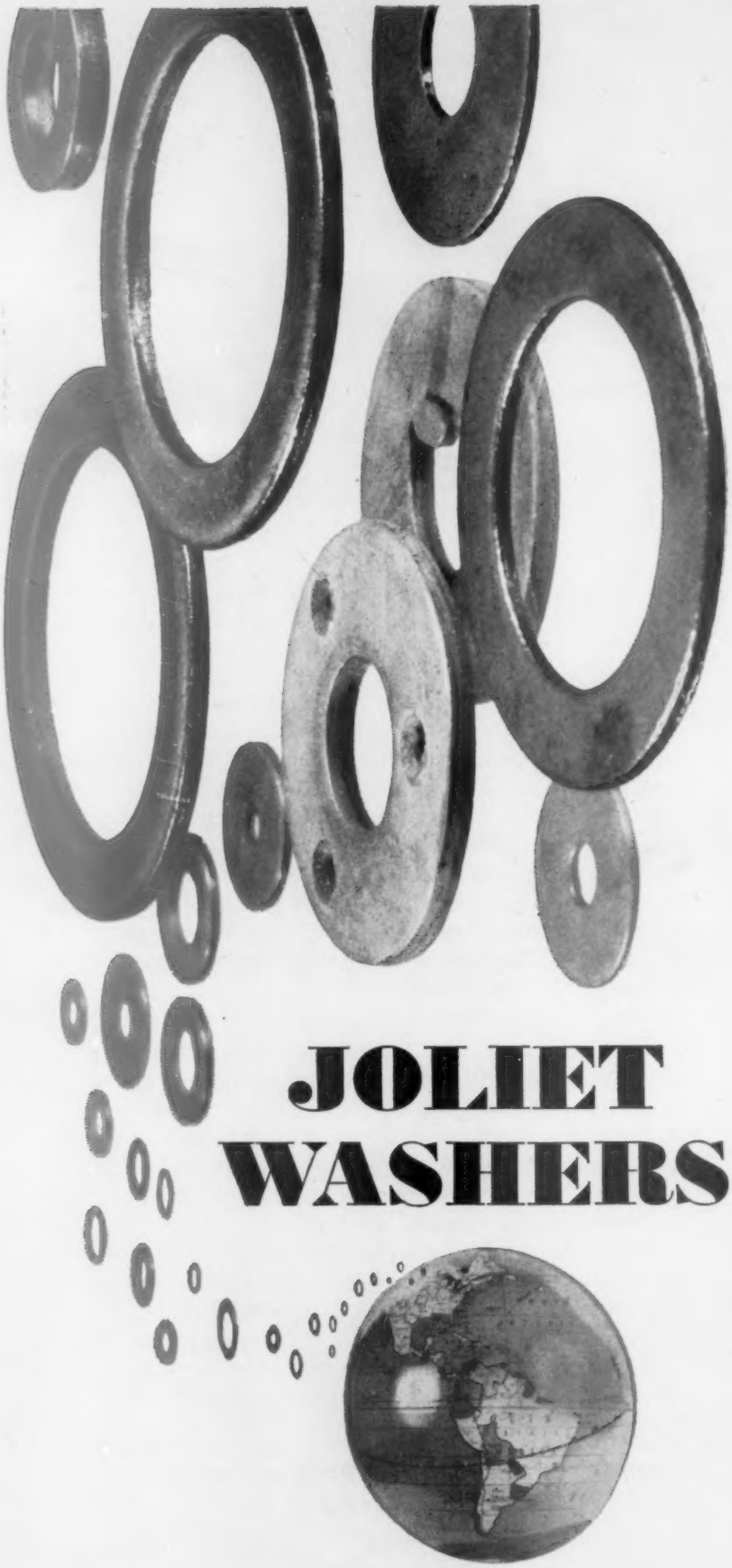
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OF ALL KINDS OF FLAT WASHERS

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For More Information Circle No. 295 on Inquiry Card—Page 17

association news

No Welcome Mat At Milwaukee

Contrary to the usual fraternal spirit displayed by the purchasing agents of the Milwaukee Association towards non-members, the February meeting was scheduled as an exclusive affair with no guests invited. Space limitations did not permit it. The association had been invited by the Allen-Bradley Company to hold their meeting at the Allen-Bradley Auditorium. The company played the part of a most gracious host for the whole evening. After a splendid dinner, there was a movie shown on the company's new Vista-Vision Screen, starring none other than Humphrey Bogart and Joan Bennett in "We're No Angels." It was a most enjoyable evening and effusive thanks are owed Bert Nelson and Allen-Bradley for the arrangements.

On February 21, 22, and 23, a Purchasing Techniques Institute was conducted at the Hotel Astor Milwaukee. It was co-sponsored by the Industrial Management Institute of the University of Wisconsin in conjunction with the Milwaukee Association of Purchasing Agents. Among the purchasing men conducting discussions were Dwight Brooks of Champion Spark Plug Co., Detroit; H. J. Jungbluth of Oilgear Co., Milwaukee and Albert Hayes of Bigelow-Sandford Co., (Retired), New York.

Rhode Island Ass'n

At the February monthly dinner of the Rhode Island Purchasing Agents Association, held at the Narragansett Hotel, Providence on Monday, the 27th, John L. Rego, director of Agriculture, gave a most learned exposition on "Natural Resources in the State of Rhode Island."

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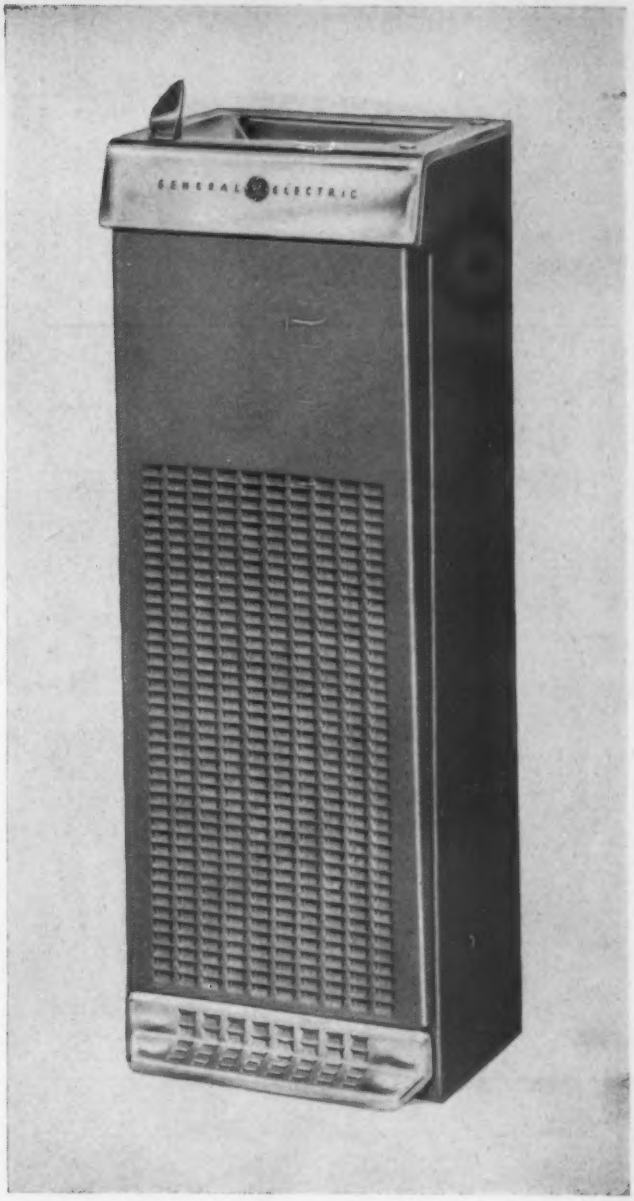
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WATER COOLERS

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These features make the big difference:

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Whenever you include water coolers in your floor plans, specify G-E Water Coolers...not only for quality and special features, but because there's a General Electric model to fit your particular requirements. They range in capacity from 2.85 to 21.5 gallons per hour. The standard G-E 5-year protection plan backs up famous General Electric quality. Call your local G-E Water Cooler dealer or write to General Electric, Commercial and Industrial Air Conditioning Department, 5 Lawrence Street, Bloomfield, N. J.

Progress Is Our Most Important Product

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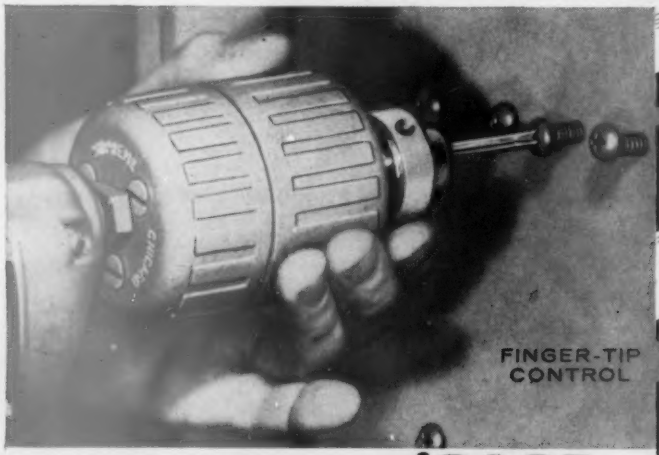
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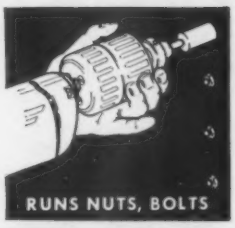
Supreme Chucks
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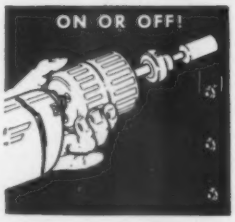
The line that's UP FRONT on America's leading power tools

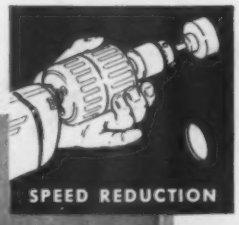
SUPREME PRODUCTS, INC., 2222 S. CALUMET, CHICAGO, ILLINOIS





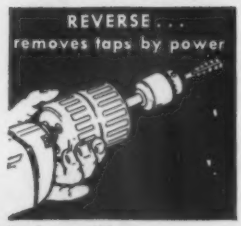












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association news

N. A. E. B. to Meet in New Orleans

The Jung Hotel in New Orleans will be the site of this year's annual convention of the National Association of Educational Buyers. Registration and a preview of what promises to be an outstanding group of exhibits begins at 4:00 P. M. on Tuesday, May 1. The official convention program (and it promises to be a good one!) starts on Wednesday morning, May 2, when Dr. Trent Root, vice president and controller of Southern Methodist University, calls the annual business officers session to order.

The actual convention program begins at 9:15 A. M. on May 2 with a discussion of "Economic Conditions" by Dr. Arthur Smith, vice president, First National Bank, Dallas, Texas. Following Dr. Smith on the rostrum is Ken White, president of Ken White Associates, who will discuss "College Business Management With Respect to College Union." The afternoon session on May 2 will include talks on "Surplus Property," and "Purchasing Analysis."

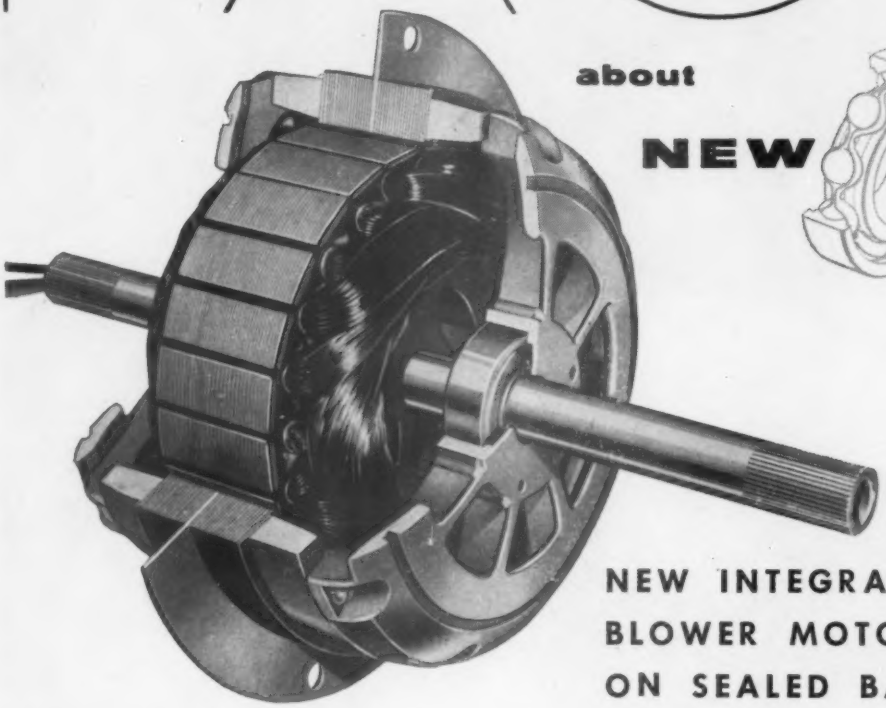
The morning of May 3 will be devoted to "Standardization," "Paint," and the Question Box. In the afternoon there will be workshops on "Medical Supplies and Equipment," "College Housing," and "ROTC—Commutation of Uniforms." On May 4, there will be more workshops devoted to topics of vital interest to educational buyers including "Central Duplicating," "Regional Techniques in Buying Lumber," and "Operating Your Own Laundry." Both the program and the current line-up of exhibitors indicates that this will be one of the most interesting and informative conventions yet.

FACTS

about

NEW DEPARTURE

BALL BEARINGS



NEW INTEGRAL-DRIVE BLOWER MOTOR DEPENDS ON SEALED BALL BEARINGS!

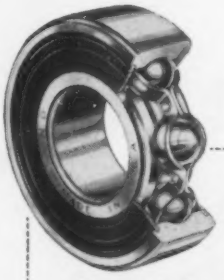
Nowhere is the superiority of New Departure sealed ball bearings in electric motor applications better exemplified than in this new integral-drive blower motor.

Revolutionary "inside-out" design of this new motor imposed a lubrication problem solved by the permanent-lubrication characteristic of the finest sealed ball bearings. In this motor, the rotating element, to which the blower wheel is attached, is on the outside and revolves around a stationary shaft through which the lead wires pass. "Sealed and lubricated-for-life" New Departure ball bearings were selected because they assure permanent lubrication, regardless of centrifugal force. Also, because motor and blower wheel share the same permanently lubricated bearings, this integral unit is free of the need for periodic servicing.

Equally important, New Departure sealed ball bearings handle combination loads in any position . . . assure positive alignment of rotor and stator. This means a versatility of application for this motor that offers new freedom to designers.

Sealed ball bearings also help increase motor efficiency and reduce electrical hum. Since in ball bearings wear is so slight as to be entirely negligible, designers were able to build in a smaller precision air gap, which is maintained throughout motor life.

Let New Departure's unexcelled engineering service show you the many advantages of sealed ball bearings in electric motor and other applications.



5 advantages of New Departure's Sentri-Seal ball bearings in electric motor applications

- **SEALED AND LUBRICATED FOR LIFE!** No need for relubrication; no danger of over- or under-lubrication.
- **SIMPLIFY DESIGN!** Eliminate need for separate seals and grease fittings.
- **CARRY LOADS IN ANY POSITION!** Moving parts are held in positive alignment, regardless of motor mounting position.
- **WEAR IS NEGLIGIBLE!** Require no attention for adjustment for wear. Have a reputation for outlasting the products they serve.
- **QUIET-RUNNING!** New Departure ball bearings are precision-made, run smoothly. Their uniformity is a guarantee of dependability.

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONN.

For More Information Circle No. 298 on Inquiry Card—Page 17



a combination . . . for game!

laminated plastics . . . a combination of properties for trouble-shy designers

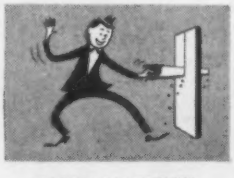
When a man goes a-hunting for a material for a specific application, he wants one that satisfies his own combination of property requirements . . . *and is easy to machine.* Synthane laminated plastic is just the material—*plenty* of good mechanical, electrical, electronic and chemical properties . . . combined with excellent machining and fabricating characteristics.



DIELECTRIC STRENGTH



HIGH STRENGTH-TO-WEIGHT RATIO



EASILY MACHINED



DIMENSIONAL STABILITY



Synthane terminal insulators must meet high property and machining standards. They must have high dielectric strength in a machinable insulator, good moisture resistance, excellent arc resistance, good heat resistance and mechanical strength. This insulator and similar parts can be fabricated at the Synthane plant with no waste, no problems to the purchaser.

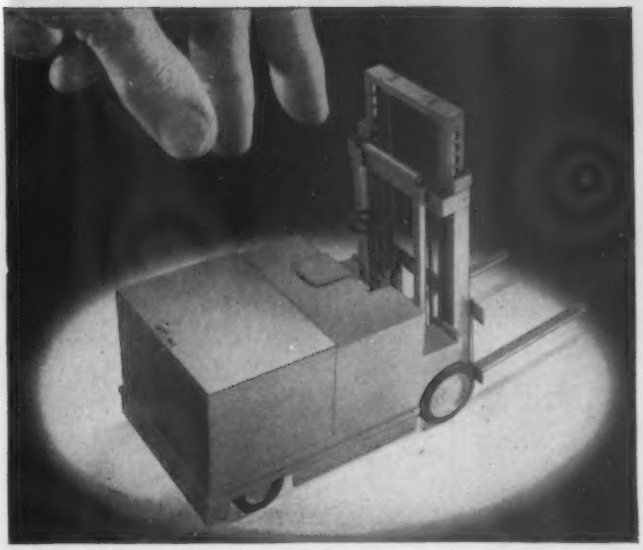


. . . send for complete catalog and fabricating data.

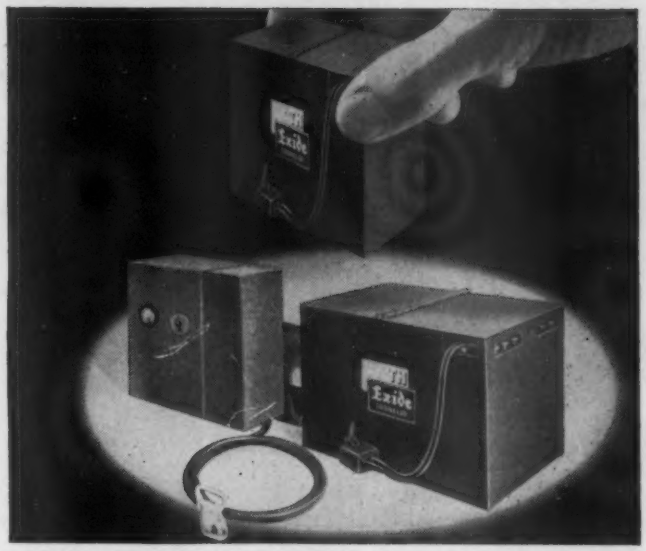
SYNTHANE

SYNTHANE CORPORATION, 7 RIVER ROAD, OAKS, PA.

For More Information Circle No. 299 on Inquiry Card—Page 17



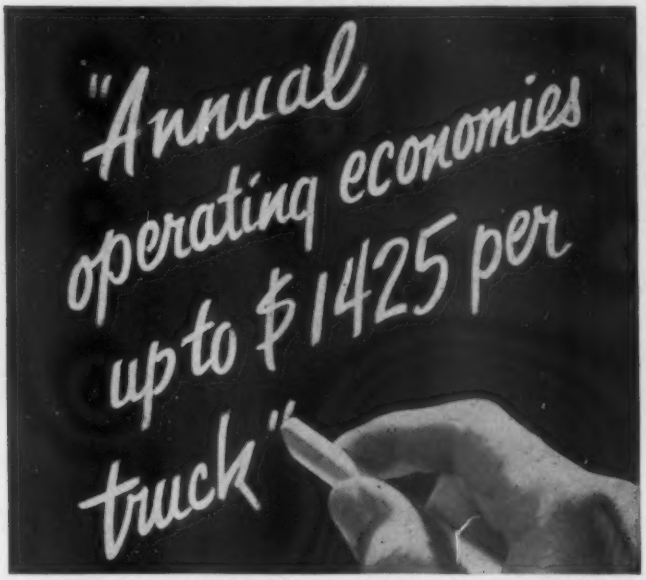
YOU BUY ONLY THE TRUCK CHASSIS. Choose any make of battery-powered electric industrial truck. Buy one truck or an entire fleet.



LEASE POWER PACKAGE FROM EXIDE. You receive famous Exide-Ironclad Batteries, plus the charger. Monthly cost is surprisingly low.



SAVE UP TO 33% CASH OUTLAY. This new Exide leasing plan brings initial cost for electric trucks down within range of trucks using any other kind of power.



PAY BATTERY LEASING COSTS OUT OF OPERATING ECONOMIES. Exide-powered electric trucks cost less to own and operate. Savings are tremendous!

SAVE UP TO 33% CASH OUTLAY ON ELECTRIC TRUCKS

New Exide leasing plan points the way to lower materials handling costs

Look how many ways Exide-powered electric industrial trucks can save you money just through operating economies: no wasted power when the truck is stopped; faster handling of materials; no unscheduled downtime; no high repair bills. *Added safety feature*—no bothersome fumes or noise. You pay for Exide power as you use it—the same as with other forms of power. But electric trucks give you over twice the operating life. Additional shifts multiply the economies.

Now you can have all these advantages at a new low initial investment—through the Exide leasing plan. And you get famous Exide-Ironclad heavy duty batteries with the unique positive plate. Electrolyte flows easily through slotted power tubes to reach more active material faster. Result: an Exide-Ironclad delivers more power quicker for a longer time at lower cost.

Get all the facts and figures on how the Exide leasing plan can meet your particular requirements. Call your Exide sales representative. Talk with any electric truck salesman. Send the coupon.

Exide

Send for complete details



Exide Industrial Division
The Electric Storage Battery Company
Phila. 2, Pa.

Send me details on the new plan for cutting cash outlay on electric trucks.

Name_____ Title_____

Company_____

Street_____

City_____ Zone_____ State_____

For More Information Circle No. 300 on Inquiry Card—Page 17

KEYSTONE XL COLD HEADING WIRE



ELCO

COLD HEADING SAVES CUSTOMERS TIME AND MONEY

Elco Tool and Screw Corp., cold heading specialists of Rockford, Illinois, have helped their customers save thousands of dollars. Four case histories are shown above—where cold heading replaced other forming methods at great savings.

The *flowability* characteristics of Keystone "XL" Cold Heading Wire has solved some of the toughest and most extreme heading problems. Because of this feature, Keystone "XL" Wire results in a better finished product, free from defects, greater die life, longer runs and lower costs. Keystone quality now makes it possible to cold head parts that were formerly hot headed or machined.

Keystone does not cold head parts, but your cold heading source can tell you how you can save important dollars in time and materials when the right wire—Keystone "XL" Wire—is applied to your fastener or parts problem!



SEE YOUR KEYSTONE WIRE SPECIALIST

He knows the problems of the cold heading industry. He can help you apply the right wire to the job. For immediate information, send for new booklet—"*Facts About Cold Heading Wire.*" Write to . . .

KEYSTONE STEEL & WIRE COMPANY, Peoria 7, Illinois

KEYSTONE WIRE *for Industry*

For More Information Circle No. 301 on Inquiry Card—Page 17

association news

Scranton Ass'n Gets N. A. P. A. Charter

At a recent meeting, Wilson B. Wight, vice president of N. A. P. A. District Eight, presented the Purchasing Agents Association of Scranton with its charter which makes it a full-fledged N. A. P. A. chapter.

In September, 1954 the Scranton Association was assisted in its organization by the local Chamber of Commerce and was sponsored for N. A. P. A. by the Purchasing Agents Association of Elmira. R. E. Campbell, president of the Elmira Association, was chosen, fittingly enough, to make the presentation of the Association banner at the meeting.

The Scranton group now has more than 40 members and is on its way to becoming a large organization. Purchasing agents in Northeastern Pennsylvania are invited to attend the group's meetings and apply for membership.

Past Presidents Night Held by Washington PAs

The Purchasing Agents Association of the State of Washington had an opportunity on Thursday evening, February 9th, to renew acquaintance with their past presidents on the occasion of the annual dinner at the Olympic Hotel, Seattle. The speaker of the evening was a home product and an honorary member of the association, Harold B. Van Eaton, director of the Department of General Administration for the State of Washington. He spoke on "Milestones on the Road to Progress." He gave a lucid analysis of why temporary setbacks should properly be regarded as only halting places to consolidate gains made on an ever-forward march.



All it takes is a local phone call to your Disston distributor. He will give you prompt, personal service from his nearby well-stocked warehouse . . . help you avoid production slowdowns.

YOUR DISSTON DISTRIBUTOR ALSO OFFERS YOU:

Large economies. Your Disston distributor carries a wide inventory of the Disston tools you use regularly. Your purchasing, receiving and bookkeeping procedures are simplified—thus reducing your costs.

Sound advice. Your Disston distributor is a well-informed specialist, having wide experience in solving metal-cutting problems. As a center of information, he can help keep you informed of the latest developments in your field.

To learn more about the Disston line of fine tools—and how you can profit from using them in your plant—call your local Disston distributor.

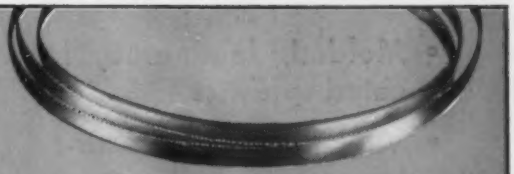
Henry DISSTON DIVISION
H. K. PORTER COMPANY, INC.
433 Tacony, Philadelphia 35, Pa.

HKP

YOUR DISSTON DISTRIBUTOR STOCKS THESE QUALITY DISSTON TOOLS:

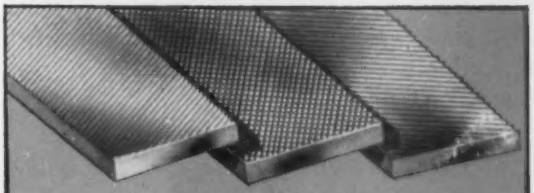
DISSTON HACK SAW BLADES

Sharp, clean-cutting blades for hand and machine use. Blades are carefully milled, accurately set. Wide selection: Super-Safe, High Speed Steel, Di-Mol, Chromol and Duraflex.



DISSTON METAL CUTTING BAND SAWS

Uniform hardness and temper, durable edges. Made in both Hard Edge Flexible Back and Hardened Throughout styles.



DISSTON FILES

Rugged, long-lasting files for every purpose. Wide selection: exclusive *Bite-Rite*® American Pattern files, versatile Multi-Metal files and precision-made *Superfine*® Swiss Pattern files.

For More Information Circle No. 302 on Inquiry Card—Page 17



C-D-F DILECTO® LAMINATED PLASTICS

—High dielectric and mechanical strength

Dilecto, made in *many grades,* is available in the form of sheets, tubes, rods, and *complete fabricated parts.*

Bases available:	
Glass Mat	Cellulose or Asbestos Paper
Woven Glass Cloth	Woven Asbestos Fabric
Cotton Mat	Asbestos Mat
Cotton Fabric	Woven Nylon Fabric
Resins:	
Phenolic	Melamine
Silicone	Polyester
Epoxy	Teflon*

Fast service is assured. Call your C-D-F sales engineer for purchasing and technical help, or write C-D-F for new catalog D-55.

C-D-F points on purchasing PLASTICS AND FIBRE

Simplify electrical insulation buying at one reliable source

- **Molded, laminated, fabricated plastics**
- **Vulcanized and resin-impregnated fibre**
- **First-quality mica products**
- **Impregnated spiral paper tubing**

More types of electrical insulating materials, more grades, better and faster machining and fabrication, and keener technical assistance are yours at C-D-F, a big, reliable source of supply. Let the man from C-D-F (his phone number is shown) help you and your engineers from the design stage to choose the best laminated plastics, fibre, or mica product to meet your need. *Shorter, fewer interviews* with one technically-qualified C-D-F sales engineer save you the time and worry of separate calls from many sources. Your buying is simplified, your products improve, your costs drop!

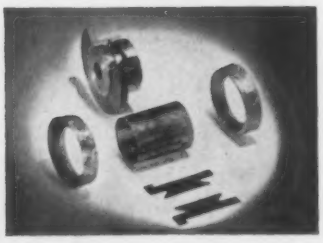
DIAMOND® VULCANIZED FIBRE—

any size or shape at low cost



Arc-resistant, arc-quenching, non-corroding, mechanically strong. High uniform quality assured by America's most experienced vulcanized fibre makers. Available from C-D-F in sheets, rolls, strips, tubes, rods, formed and machined specialties. Write for the Diamond Vulcanized Fibre Catalog DVF-55.

C-D-F MICABOND® COMPONENTS—

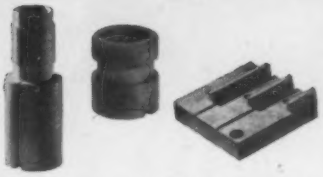


Highest insulation value for motors

C-D-F mica segments insulate America's best-selling motors and generators. Forms available: Sheets—Tubing—Flexible Tapes (with cotton, silk, paper, woven glass, and Mylar* backings)—Fabricated Parts in the form of Segments, "V" Rings, Slot Liners, Washers, Punchings of various shapes.

Strictly followed specifications, low costs, fast deliveries assured. Call your C-D-F sales engineer or write for samples of Micabond materials and Catalog M-51.

LET C-D-F PLASTICS FABRICATION SAVE YOU TIME, MONEY, WORRY



At the well-equipped C-D-F machine shops, plastics and fibre fabricating is done adjacent to the raw-materials presses. Production and machining are synchronized efficiently to save you money. In the time you'd need to experiment and probably reject much costly material, C-D-F's vast plastics know-how can complete and ship the order, without waste or delay. Undivided responsibility pays off for you!

FOR RELIABLE PRINTED CIRCUITS— C-D-F METAL CLADS

Superior heat-resistance, bonding strength, and mechanical and electrical properties. Epoxy, phenolic, and Teflon* resins laminated with paper, glass fabric, glass mat. High bond strength of foil to plastic makes punching and machining easy either before or after etching. Write for new Catalog D-55 and Metal-Clad folder.

CANS, BOXES, TRUCKS of C-D-F FIBRE



Rugged, easily-cleaned C-D-F Diamond Vulcanized Fibre textile-roving cans; light, non-splintering mill boxes; strong, easy-to-handle barrels, doffing trucks, hand trucks. Call your C-D-F Sales Engineer for advice on how fibre products can increase efficiency in your plant, or write for big C-D-F Receptacles Catalog.

C-D-F INSULATING TAPES—

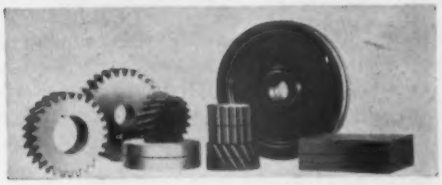
Great flexibility and heat-resistance

Pressure-sensitive thermoplastic and thermosetting tapes for all types of electrical uses are made by C-D-F from silicone varnish, silicone-rubber, Teflon*, and Micabond, with various supporting fillers and backing materials. *Color Identification*—C-D-F tapes of Teflon are made in the standard RETMA colors. Call your C-D-F representative, or write for test samples.



C-D-F CELORON® MOLDED PLASTICS—

High strength,
long life,
low cost



For gears, couplings, insulators, all types of molded parts, Celoron is a molded-macerated and/or combination laminated material bonded with phenolic resins—strong enough for automotive timing gears, versatile enough for the smallest molded insulating part or the largest electromechanical supports. Get Celoron samples and Bulletin DC-54 by writing to C-D-F.

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CLEVELAND 14, OHIO Cherry 1-5220
550 Leader Building
DAYTON 2, OHIO Adams 4291
221 Third National Building
DENVER 2, COLO. AComa 2-2236
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KANSAS CITY 11, MO. Logan 6014
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EXPORT DEPARTMENT: BRIDGEPORT, PENNSYLVANIA, U. S. A.

*DU PONT TRADEMARKS

CDF CONTINENTAL DIAMOND FIBRE

CONTINENTAL-DIAMOND-FIBRE DIVISION OF THE BUDD COMPANY, INC.
NEWARK 41, DELAWARE

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No Missing Link in Product Quality



with JEFFERSON high-quality petrochemicals

Ethylene Oxide, Glycols, Dichloride
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Ethylene, Propylene and Glycerine Carbonates
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Shipped from convenient distribution points at Port Neches, Houston, Chicago, Los Angeles, and Tenafly, New Jersey—available in bulk, or 55-gallon drums.

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Essential Chemicals from Hydrocarbon Sources

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For More Information Circle No. 304 on Inquiry Card—Page 17



HALLOWELL

SOLID STEEL COLLARS

Size-marked for quick identification in 42 stock sizes

And these precision-machined solid steel collars stay put because they are held in place on the shaft by the famous UNBRAKO Self-Locking Socket Set Screw. Authorized industrial distributors carry complete stocks in sizes from 3/16" to 3" inclusive. Write for Bulletin 868. STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

HALLOWELL POWER TRANSMISSION DIVISION SPS JENKINTOWN PENNSYLVANIA

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association news

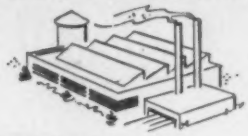
N. Calif. Fed. Procurement Officers Hold Lunch

Different from most purchasing agents who like to foregather in the evening for their monthly meetings, the members of the Federal Procurement Officers Association of Northern California generally hold a noon-time luncheon. The February lunch meeting was held at the Leopard Cafe in San Francisco on Wednesday 15th. The various committees gave a short report on their activities. The program chairman, Commander V. J. Harris Jr., had arranged with G. W. Aljian, director. Purchasing and Packaging, California & Hawaiian Refining Corp., to address the meeting on the topic "The New Science of Purchasing." He developed his subject in a most illuminating manner.

Executive's Night At Cleveland Association

The February dinner meeting of the Purchasing Agents Association of Cleveland, held at the Hotel Carter, Cleveland, on February 16, was scheduled as an Executive's Night. A majority of the members had invited his immediate superior or some other management member as his guest. As speaker of the evening, R. H. Collacot, director of public relations, Standard Oil Co. of Ohio gave an inspiring address on "Enlarging the Horizons of Purchasing."

At the forum, preceding the dinner, Alan Reid, Diamond Co. acted as moderator of a discussion on "Standardization." Supporting him was William G. Waltermire, chief products engineer, Lamson-Sessions Co.



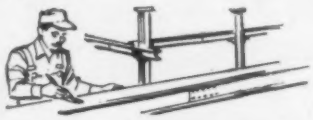
PROVED THROUGHOUT INDUSTRY FOR OVER THIRTY YEARS

Industrial leaders all over the world have used Rust-Oleum to stop and prevent rust for over thirty years. Rust-Oleum can do the same for your tanks, stacks, pipes, machinery, metal sash, wire fences, girders, etc.

RUST-OLEUM IS EXCLUSIVE



Rust-Oleum uses a specially-processed fish oil vehicle that penetrates rust to bare metal, dries right, and is free from objectionable odor. Accept no substitutes. Buy—and specify Rust-Oleum. You'll be happy that you did. There is only one Rust-Oleum—it is distinctive as your own fingerprint.



APPLY DIRECTLY OVER RUSTED SURFACES

Just scrape and wirebrush to remove rust scale and loose rust—then brush Rust-Oleum 769 Damp-Proof Red Primer right over the remaining rust, usually eliminating costly surface preparations. Then—follow-up with your desired Rust-Oleum finish color.



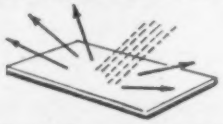
MANY COLORS, INCLUDING ALUMINUM AND WHITE

You beautify as you protect, because Rust-Oleum finish coatings are available in practically all colors, including aluminum and white. They use the same basic rust-inhibiting vehicle as Rust-Oleum 769 Damp-Proof Red Primer and so provide double protection.

GREATER COVERAGE—EASY TO USE



Rust-Oleum is so easy to apply by brush or spray that one man can often do the work of two. Because of Rust-Oleum's easy-flowing qualities, an average of 30% more coverage is usually received—depending upon the type and porosity of the surface.



PRACTICAL ANSWER TO YOUR RUST-PRODUCING CONDITIONS

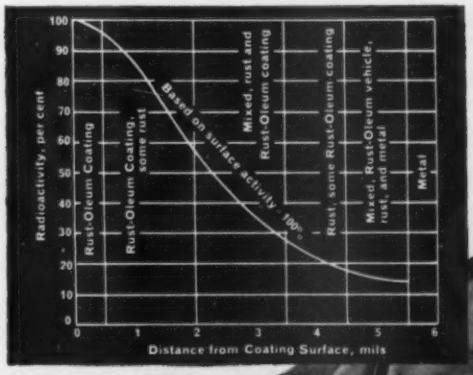
Rust-Oleum dries to a firm, decorative finish that resists salt water, heat, fumes, sun, steam, humidity, and weathering. Whatever your rust problem—you'll find Rust-Oleum the modern, practical way to stop rust.

Facts

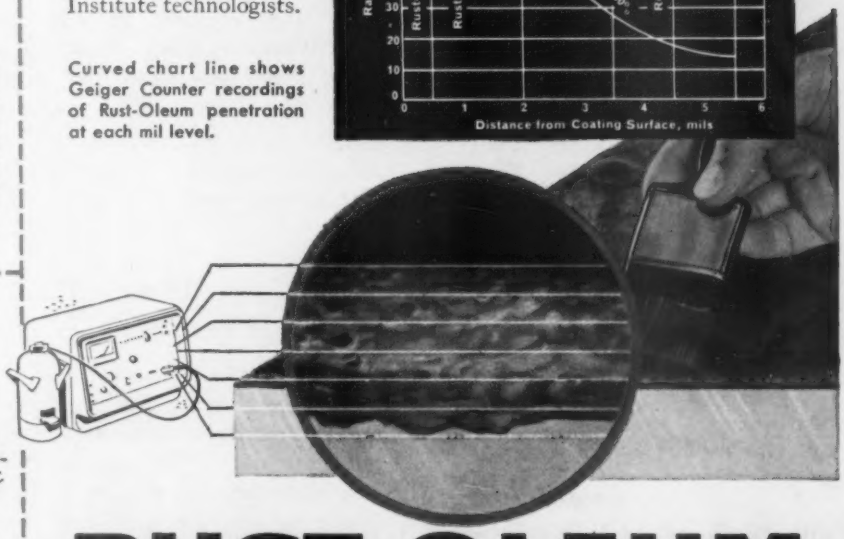
prove the economy of

RUST-OLEUM®

Geiger Counter traces Rust-Oleum penetration through rust to bare metal. The results of radioactive research prove that Rust-Oleum penetrates rust to bare metal. Rust-Oleum's *specially-processed* fish oil vehicle was radioactivated and formulated into Rust-Oleum 769 Damp-Proof Red Primer—then applied to rusted test panels. Geiger Counters then traced Rust-Oleum's *specially-processed* fish oil vehicle through the rust to bare metal. This penetration enables Rust-Oleum to be applied directly over sound rusted surfaces—usually eliminating costly surface preparations. Attach coupon to your business letterhead for your thirty-page report, "The Development of a Method To Determine The Degree of Penetration of a Rust-Oleum Fish-Oil-Based Coating Into Rust On Steel Specimens," prepared by Battelle Memorial Institute technologists.



Curved chart line shows Geiger Counter recordings of Rust-Oleum penetration at each mil level.



RUST-OLEUM®

STOPS RUST!



See our Catalog in SWEETS, or write for complete information. Prompt delivery from Industrial Distributor stocks.

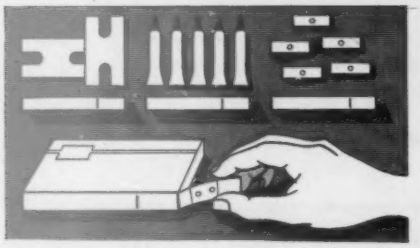
ATTACH TO YOUR LETTERHEAD—MAIL TODAY!



Rust-Oleum Corporation
2433 Oakton St.,
Evanston, Illinois

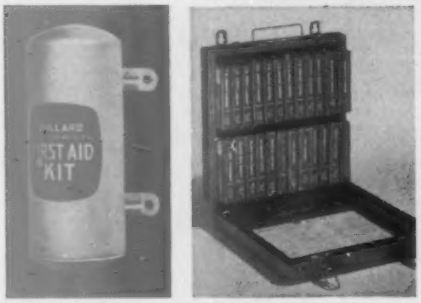
- ☐ Complete literature with color charts.
- ☐ Thirty-page report on Rust-Oleum penetration.
- ☐ Nearest source of supply.





Because we have the widest available selection of unit packets, and a broad choice of heavy duty kits, we can provide you with the perfect combination of kit and fill for your specific plant and field conditions.

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on Inquiry Card—Page 17

association news

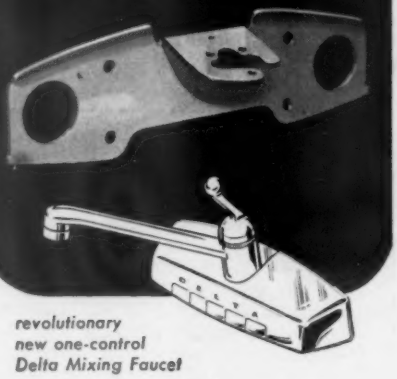
PAs of Alabama Celebrate a Birthday

Thursday, February 9th was scheduled by the Purchasing Agents Association of Alabama as the date to celebrate the Twenty-Eighth Anniversary of its organization. To commemorate it, a bang-up Seller-Buyer dinner meeting was held at the Dinkler-Tutwiler Hotel in Birmingham at which a large gathering of purchasing agents and their seller guests turned out. The committee, under the chairmanship of George L. Wilson of the Jefferson County Commission, had happily been able to arrange for a most qualified speaker for a Seller-Buyer dinner, able to talk the language of both sides of the copartnership. He was Stuart F. Heinritz, editor of PURCHASING, who had chosen as his topic: "Who's Selling Whom." He most ably developed the theme that the relationship between buyers and sellers was not an antagonistic but a mutually complementary one.

Buffalo Honors Past Presidents

The February dinner meeting of the Purchasing Agents Association of Buffalo, held at the Hotel Sheraton on Wednesday, the 8th, entertained the past presidents as its guests. They were seated at a special table and all of them were full of vim and vigor. High tribute was paid to the efforts they contributed to bring the association to its present flourishing condition. The guest speaker at the meeting was Dr. George Strauss, assistant professor in the School of Business Administration, University of Buffalo. His talk on "Personnel Management" was most interest-

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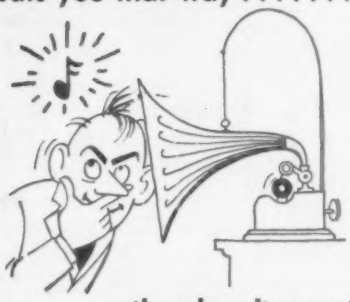
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ing. It was also an unusual form of talk in that he allowed his audience to participate and give their viewpoints throughout the discussion.

Contributing to the enjoyment of the evening was a hilarious skit by the association's two thespian members, Al Judd and Russ Unkrich. It was a takeoff on a supervisor-employee interview. Welcome to our new members: Alvin H. Ehms, J. J. Cranz Co.; William E. Goins, General Mills Co.; Frank Uba, Siegfried Construction Co., Inc.; William E. Baer, Ford Motor Co.; Lawrence C. Ceglia, Frontier Marine Supply Co.; Charles W. Franc Jr., H. F. Stim Inc.; Edgar Kowalski, Conax Corp.; and Alfred A. Frosdick, Ward Brothers Mill Supply Co., Inc.

N.A.P.A. President Visits Denver Association

Thursday evening, February 23rd, was a special occasion for the Purchasing Agents Association of Denver. At the dinner meeting, held in the Brown Palace Hotel, Denver, A. W. Soell, president, N.A.P.A. was a special guest of the evening. Also present was Walter Armstrong, district v.p. Welcomed as new members of the Denver association were Herrick W. (Pop) Gould, assistant director of purchases for C. F. & I at Pueblo and William W. (Bill) Hammond, purchasing agent for Sunstrand Aviation.

Dallas PAs Told of Purchasing Challenges

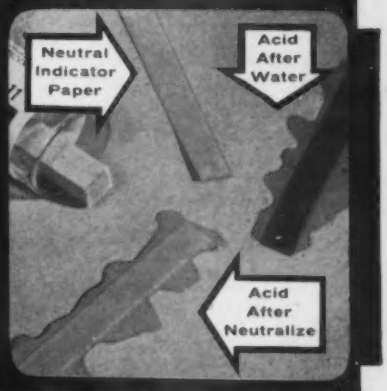
At the March 8, regular dinner meeting of the Purchasing Agents Association of Dallas, two of the association's own members were the guest speakers. They afforded an insight into the challenge presented by the purchasing problems they encountered in their respective companies. R. E. F. Schmid spoke of the ones met in the purchasing department of Continental Supply Company and Frank W. Wodrich of those of Texas Instruments, Inc.

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Instantly neutralizes acids or alkalies!



When acid or alkalies splash eyes or skin, Neutralize works for immediate relief and prevents severe burns. No dangerous time loss determining if chemical is acid or alkali—Neutralize counteracts both. Try this test—you can do it yourself!



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Today's purchasing agent knows the importance of efficient, engineered transportation in controlling the cost and flow of materials used in his plant. His increasing reliance upon motor transportation over the past decade attests to its many comparative advantages—its flexibility, its speed, its versatility, its economy.

Serving more than 5000 industrial and commercial points in 37 states, Spector enables the progressive purchasing agent to broaden his list of sources, reduce over-all inventories and capital investment, coordinate his inbound materials with the distribution of plant output.

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association news

B. C. Ass'n Acquires A First as Guest

On Tuesday evening, January 10, at the Hotel Vancouver, Vancouver, B.C., the Purchasing Agents Association of British Columbia acted as host to Fred G. Samis, the first president of the newly formed Canadian Association of Purchasing agents. The guest of honor brought to the British Columbia Association greetings from more than 200 purchasing agents across Canada. In his address, Mr. Samis pointed out that, with the growing stature and recognition of the purchasing function, purchasing agents should regard themselves as professionals, skilled at their trade.

On January 24th, the association held an educational forum, at which Steve Walters, sales manager of Aluminum Co. of Canada, Ltd., "wised up" the PAs to the uses of aluminum in industry today. He was ably assisted by three of his specialized salesmen.

Syracuse Ass'n Meets Jointly with Purchasing Techniques Inst.

On Wednesday, February 20, the Purchasing Agents Association of Syracuse and Central New York, Inc., held a joint meeting at the Onondaga Hotel, Syracuse, with the final session of the Purchasing Techniques Institute. The association's membership had an opportunity to benefit from the last meeting of the Institute and to hear the guest speaker of the evening, G. W. Howard Ahl, of N.A.P.A. speak on "Purchasing—A Management Function." He summarized as a management technique those basic ideas developed during the various sessions of the Purchasing Techniques Institute.

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Drills · Reamers · End Mills · Counterbores

These superior tools retain a sharp edge under high temperatures and have excellent resistance to abrasion. In addition to regular tools, both solid carbide and carbide tipped, there are many CLEVELAND Carbide Tools for special purposes.

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You have a *potential* fire-fighting team right in your plant. These would-be fire fighters *could save your business if fire struck unexpectedly*. All they need is training, the kind that will enable them to respond instantly and properly to any kind of fire emergency.

Ansul can provide this training for a group of your men just as it has for hundreds of its customers. And there will be no charge. It is just one of the "essential" services that Ansul provides for its customers.

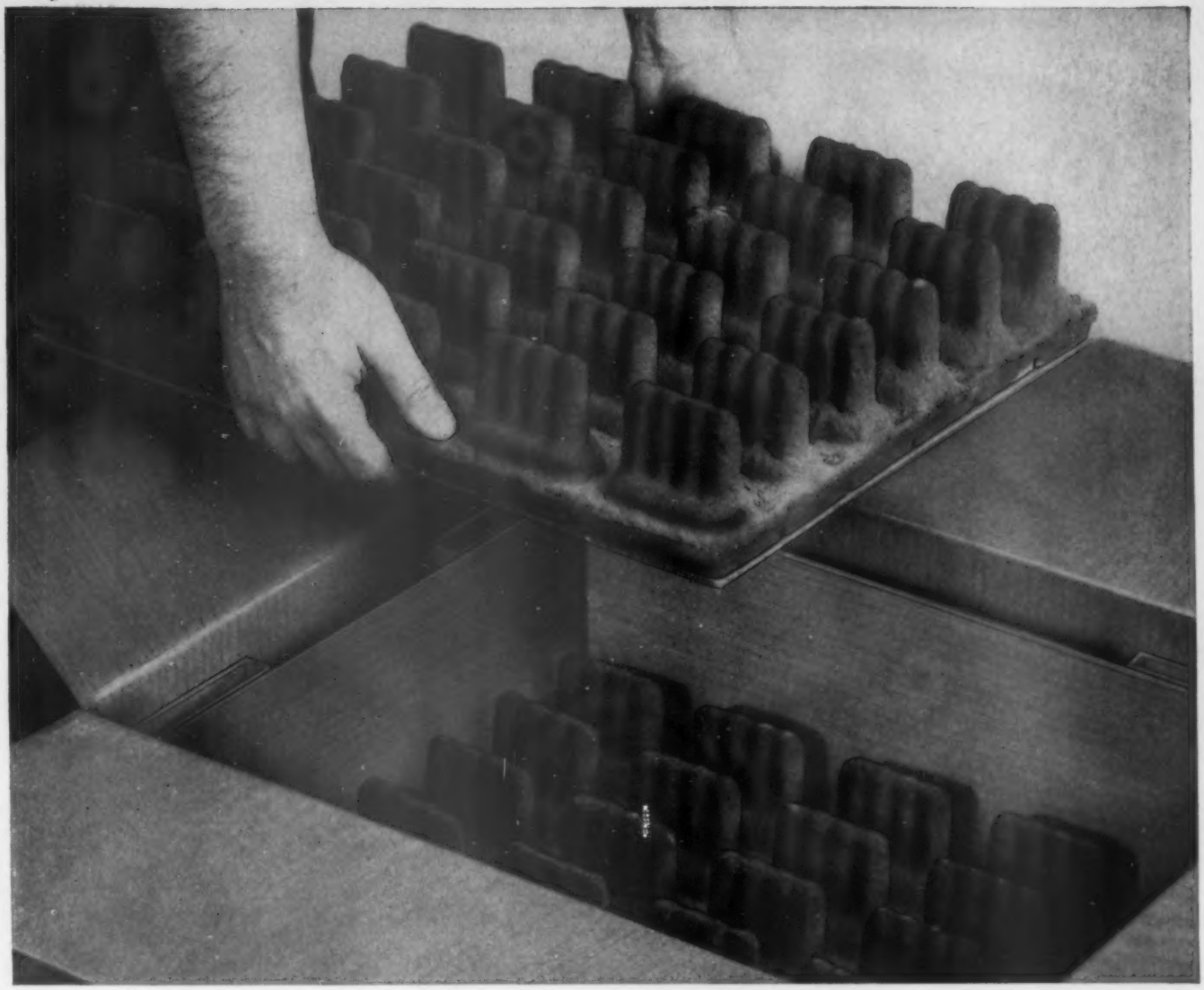
Twenty years experience in the fire protection industry has proved to Ansul many times over that all the fire equipment in the world will not save your business *unless* trained hands are available to man that equipment. So, it is important to Ansul that you get *training* along with the fire equipment you buy. Only then will you experience the security that goes with having a complete fire protection program. Only then will you get what you really pay for, what you really need—*complete fire protection*.

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ANSUL

For More Information Circle No. 313 on Inquiry Card—Page 17



75,000 fragile shell molds arrive unbroken in Gair containers

Last year breakage of fragile Spectroshells in shipment—*running as high as 20%*—was eating up the profits and straining the customer relations of Baird Associates of Cambridge, Mass.

Then, on June 1st, Baird started packing these shell molds (used in metal analysis) in a new Gair container. During the first 6 months they shipped 75,000 Spectroshells—*without a single customer complaint on breakage!*

Why is the new Gair container safer? First, it doesn't get pushed and bounced around by truckmen. That's because it's half the size of the previous container, making it light and easy to carry. Second, Gair surrounds the Spectroshells with six ingeniously folded corrugated packing sheets to cushion shocks.

Standardization of containers and attractive printing are additional Gair touches. "Our Gair-designed container has done much toward building customer acceptance," writes Russell P. Mahan, Director of Purchases at Baird Associates. If your product needs greater protection, lower cost or increased sales appeal try a Gair container. Call us.

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association news

Winter Meeting of the Old Dominion Ass'n

The Hotel Roanoke, Roanoke, Va., was the scene on January 27 and 28 of the two day winter meeting of the Old Dominion Purchasing Agents Association. The meeting started with a plant visitation to the Stone Printing & Mfg. Co., Roanoke, on Friday afternoon, January 27. At the banquet, Friday evening, Dr. Walter A. Flick, Washington & Lee University, gave a very intelligent talk, entitled "Intelligence-Unemployed." The open meeting at 10:30 A.M. Saturday, January 28 was honored with the presence of Wilson B. Wight, v.p., 8th district, N.A.P.A. and director of purchases, Bausch & Lomb Optical Co. He delivered a most enlightening talk on "The Use of Association Materials."

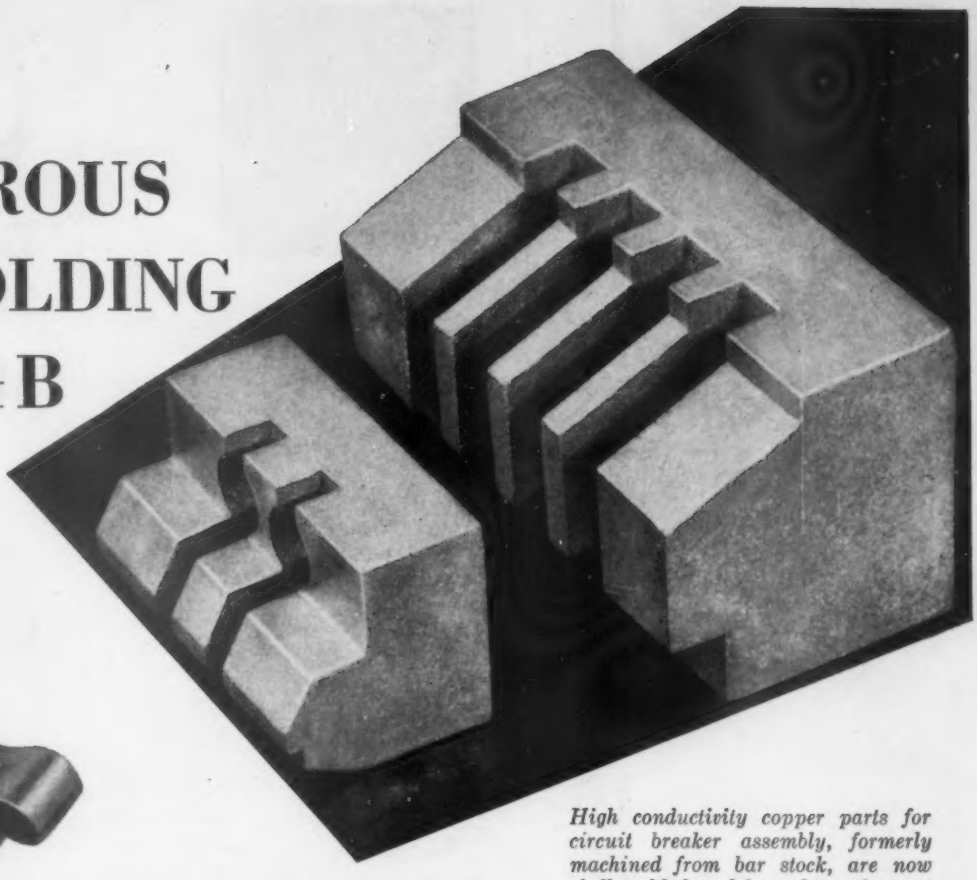
The final open meeting at 11:15 A. M. Saturday was conducted by Dr. Emanuel M. Last, v.p., of the association and a member of the faculty of the School of Business Administration, University of Richmond, Va. His topic was "The Purchasing Agent of the Future." Dr. Last stated that purchasing agents and their departments will become more important in the future as part of high management.

Georgia PAs Hear Rosy Predictions

The February meeting of the Georgia Association of Purchasing Agents was held on February 9th with fifty-three members and guests present. After dinner and a short business session, the members heard some reassuring predictions by George E. Manners, dean of the School of Business Administration of Georgia State College. Educational facilities in

(*Please turn to page* 242)

For NON-FERROUS SHELL MOLDING ... see PB&B



High conductivity copper parts for circuit breaker assembly, formerly machined from bar stock, are now shell-molded and brazed together—at large savings in total cost.



Marine hardware part shell-molded of manganese bronze by Philadelphia Bronze & Brass. Note the smooth cast finish and clear definition of markings. Precise coring eliminates machining of interior surface.

Need non-ferrous castings to close tolerances? Shell molding, by Philadelphia Bronze & Brass, can offer you substantial savings. This new foundry process produces smoother surfaces . . . holds tolerances as close as 0.003″ per inch . . . reduces finish machining requirements . . . permits intricate coring. On production quantities, its cost often compares with that of sand casting.

By bringing your shell molding problems to PB&B, you profit by these extra values:

Specialized experience. For years we have specialized in casting a variety of non-ferrous alloys, including high conductivity copper alloys for electrical parts, and aluminum and manganese bronzes for structural members.

Complete facilities. Under a single responsibility are encompassed all activities to produce finished castings to your specifications, including the design and making of shell molding patterns. Casting capacity ranges up to parts 30 pounds in weight and molds up to 15″ by 20″. The most modern laboratory equipment is used to maintain strict quality control over each step in production.

For a discussion of your specific shell molding application, write today to Philadelphia Bronze & Brass, or to any of the field offices of P. R. Mallory & Co. Inc.

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For More Information Circle No. 317 on Inquiry Card—Page 17



Built for Better Protection DOCKSON HELMETS and HANDSHIELDS

ABSOLUTE SAFETY—against sparks, flash, dangerous rays. Federal Specification Plates.

COMPLETE COMFORT—Light-weight, roomy, adjustable, cushioned headgear; spring pivot for easy raising and lowering.

YOUR DOCKSON DISTRIBUTOR, a selected specialist, stocks a complete line of Dockson Products to give you fast service and personal attention. We back our distributors 100%.

WRITE FOR YOUR DISTRIBUTOR'S NAME AND OUR COMPLETE CATALOG OF HEAD AND EYE SAFETY EQUIPMENT

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For More Information Circle No. 318 on Inquiry Card—Page 17

association news

(*Continued from page 240*)

Atlanta will assure trained specialists to promote the economic development of Atlanta and the State of Georgia at an accelerated rate.

On March 22nd, the association visited the various plants of the Atlanta Paper Co. in Atlanta and a sumptuous supper topped off the visit.

Plant Visits By New England Ass'n

This spring the New England Purchasing Agents Association has had a full program of plant visitations scheduled. On February 28, techniques of corrugated box manufacturing were witnessed at the plant of Robert Gair Co., Inc., at Cambridge; on March 20, the plant of Tileston & Hollingsworth Co. at Hyde Park, Mass., was visited to see paper manufacturing; on April 24, members will visit the greeting card manufacturing plant of Rust Craft Publishers at Dedham, Mass. In May or June, members will be able to learn how fish products are cooked, frozen and packed at the plant of Gorton-Pew Fisheries Co., Ltd., in Gloucester, Mass.

The regular February dinner meeting was held on Monday 13th, at the Hotel Vendome, Boston. Lawrence S. Cooke, of the Large Lamp Dept., General Electric Co., the guest speaker, had chosen as his subject "Light Sourcery." He gave an intensely interesting demonstration of lamp development past, present and future, with a peek into the invisible—black light, etc.

The association's choice for v.p. of N.A.P.A., representing district No. 9 for 1956-57 is Robert E. Shillady, v.p., New England Power Service Co.



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PERFECTION
WORM GEAR
SPEED REDUCERS
available in
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COMPLETE SERIES



Don't go hunting around for Speed Reducers. Your nearest distributor has a complete series of Perfection Speed Reducers with ratios ranging from 5 to 1 to 60 to 1. Furnished with worm on top or bottom as desired.

Shafts are mounted in Timken anti-friction roller bearings. Threads are precision ground and accurately mated with worm gear. Heavy rigid cast iron housings . . . integral worm and shaft. The close limits to which all parts are held, assure maximum load carrying capacity, and long trouble free service.

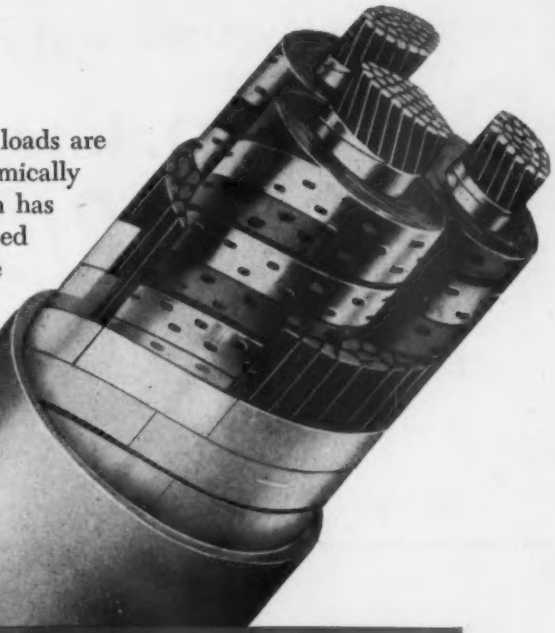
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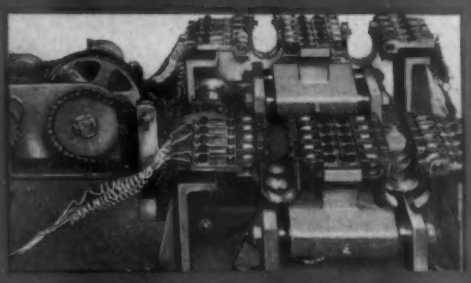
ROEBLING PAPER POWER CABLE WITH TELLURIUM LEAD ALLOY SHEATH

TELLURIUM LEAD ALLOY SHEATHS MEET ALL REQUIREMENTS FOR FATIGUE RESISTANCE

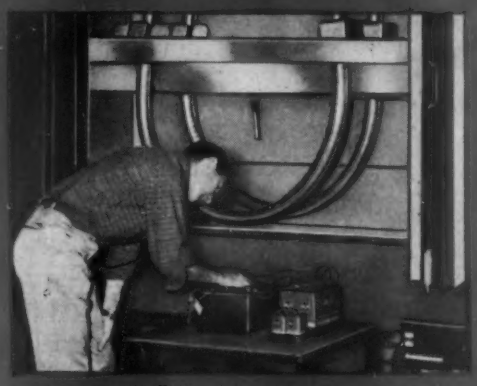


TODAY'S HIGHER TEMPERATURES and increased loads are power cable problems met most satisfactorily and economically by Roebling Tellurium Lead Alloy Sheath. This sheath has absolutely top fatigue resistance; gives vastly increased service life despite severe bending stresses and cable movement during load cycles. Furthermore, Roebling Tellurium Lead Alloy has outstanding stability under heat—high temperature incurred at joints, terminations and in duct splicing cause no grain growth or physical impairment.

Roebling is unmatched in the breadth of its experience with Tellurium Lead Alloy Sheath and in the volume of cable it has produced with this remarkable sheathing. We will welcome the opportunity to send you Bulletin 205-B containing technical data on Roebling Tellurium Alloy Sheaths.



Lead strip fatigue test



Fatigue test of full cable sections—temperature-controlled

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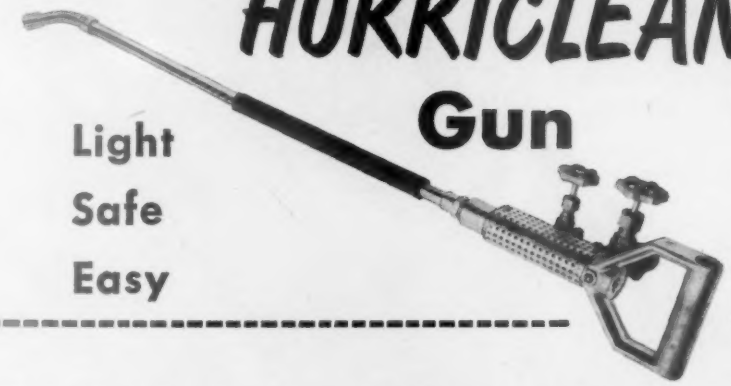
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New steam-detergent gun
packs a cleaning wallop
—yet it weighs in at only 6¼ lbs.

Oakite
HURRICLEAN®
Gun

Light
Safe
Easy



Shop-talk is growing about the "Hurriclean" Gun. Here is a steam-detergent gun any child could handle, it's that light, that safe—but see what it does. Hitch it to your steam supply, aim it at your toughest cleaning job. Watch it slam into heavy soils, grease, grime. It's almost like "wishing" the dirt away.

Steam-gunning with a hot detergent solution isn't new. What's new is a steam gun that is not heavy, not dangerously hot, not cumbersome. All these disadvantages are completely eliminated in the new Oakite "Hurriclean" Gun.

Light...Here is a gun that weighs six and a quarter pounds... and does heavyweight cleaning.

Safe...Here is a gun that's cool to the touch, hour after hour. The insulated inner tube carries steam, the outer tube carries the cool detergent solution. There are no dangerous hot spots.

Easy...Here is a gun that rotates its spray a full 360° by a twist of the handle. You don't swing the gun around, you don't kink hose, you don't even change stance. Cleaning "from under" is a cinch.

See what this amazing new Oakite development can do toward speeding up and simplifying your production and maintenance cleaning, and on special jobs like paint-stripping. See what it can mean to you in terms of money saved through time saved. Call your Oakite man for a demonstration. Or write for descriptive booklet to Oakite Products, Inc., 54 Rector Street, New York 6, N. Y.

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association news

Springfield Plays Host to Five Associations

To meet A. W. Soell, president of N.A.P.A., five purchasing associations joined in a five-city association meeting at the Springfield Products Company plant in Springfield, Ohio. The host club to the other four associations, those of Dayton, Cincinatti, Lima, and Columbus, was that of Springfield, Ohio. "Al" as the guest speaker gave the five-city meeting, as usual, a top-notch, inspiring address. Also present for the joint meeting was Roy Mills, v.p., district No. 6, N. A. P. A.

Past Presidents Guests of Metropolitan Purchasers

As customarily, the February dinner meeting of the Metropolitan Purchasers Club was devoted to the past presidents of the club. It is the Club's simple but effective way of rendering thanks to those who in the past gave so unselfishly of their time to foster the club's growth. Due to the vagaries of business, some of the past presidents have left the club for various reasons. Therefore, so that old friendships may be renewed, each past president is individually invited to the meeting. Fifteen such invitations went out this year.

The guest speaker at the February meeting held on Tuesday, 14th, was Harold B. Schmidhauser, director of Communication Corps of American Management Association. In his talk on "New Techniques in Communication," the speaker dwelt on the subject as applied to purchasing procedure.

At the meeting the following new members were welcomed: Walter E. Doe, Jr., Commercial

(*Please turn to page* 246)

Now in <u>two</u> sizes...



NEW Brand 58

Sheet size—9⅝" x 10¼"
Sheet count—125 two-ply per box
Case size—22⅜" x 18" x 17¼"
Case count—18 boxes

Brand 59

Sheet size—9⅝" x 13⅝"
Sheet count—125 two-ply per box
Case size—29⅜" x 18" x 17¼"
Case count—18 boxes.

Industry's most popular DISPOSABLE WIPERS

Now the famous Scott Wiper is available in two sizes for a still broader range of industrial uses. New Brand 58 is of the same high quality and absorbency as Brand 59. It, too, has the welded two-ply strength and effective grease-gripping perf-embossed surface.

Your Scott representative will be glad to help you set up a test in your plant to demonstrate the cost savings and other advantages of Scott Wipers over ordinary wiping material. Or write: Scott Paper Company, Chester, Pennsylvania.

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The most satisfactory method of supplying a GOOD PRODUCT to the consumer is in a distinctive, properly designed and constructed container.

AC Spark Plug chose a CLEVELAND CONTAINER to package their tachometer. This sensitive instrument is adequately protected in a convenient, attractively labeled container. This is typical of the countless packaging problems competently handled by our designers and engineers.

Have you a packaging problem? The answer may lie in the wide range of Cleveland Containers . . . or in one specially designed to fit your product.

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Write the plant nearest you for our complete packaging folder.

Why pay more? For Good Quality . . . call CLEVELAND!

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association news

(*Continued from page* 244)

Solvents Corp.; Martin Fox, Park & Tilford Distillers Corp.; Robert R. Landsiedel, Kings County Lighting Co.; James R. Stanton, Nickel Processing Corp.; Edgar S. Tilton, Jr., Bellevue Medical Center.

Pittsburgh PAs Learn About Transportation

The February meeting of the Purchasing Agents Association of Pittsburgh was held on Tuesday the 21st, at the University Club. Charles M. Donley, general manager of operations. Charles Donley & Associates, was the featured guest. He spoke on "Transportation's Place in the Purchasing Function." He emphasized that a good purchasing job needs a good traffic job because, in the speaker's words, "you haven't bought it until it arrives."

The March meeting was the association's annual executive night. At this, the radio news commentator, Fulton Lewis, Jr., was the guest speaker.

Central Michigan PAs Grounded On Grinds

Members of the Central Michigan Purchasing Agents Association had a rare chance on February 21st to keep their nose close to the grindstone. The monthly dinner meeting had been arranged as a plant visitation at the Jackson, Mich., unit of Macklin Co., manufacturers of grinding wheels and abrasives. A tour of the plant proved most informative on the potential of various grinding wheels and stones. Macklin had arranged an entertaining program, not the least enjoyable part of which was an excellent dinner served at 6:30 P.M.



Leland motors make crashes pay off

Crashes here are good for business. But tough on motors. There's the obvious problem of shock—constant start and stop, arcing from the overhead pick-up, overloading in jam-ups.

Yet Leland engineers have designed and built a motor so ideally suited to the job that two of the nation's largest producers of this type of playland equipment use Leland motors exclusively. And have for years.

A soundly engineered Leland motor is a good bet to make *your* product "pay off." Better investigate Leland's complete line of standard motors, from ⅙ to 5 hp—soon up to 20 hp—in all popular types and enclosures. Contact us today.



Illustrated is a Leland fractional hp, 115/ 230 v ac drip-proof, ball-bearing, repulsion-start induction-run motor.

Another AMF Product

LELAND MOTORS

THE LELAND ELECTRIC COMPANY
Dayton 1, Ohio
Division of AMERICAN MACHINE & FOUNDRY COMPANY

For More Information Circle No. 324 on Inquiry Card—Page 17

purchasing people in the news

The appointment of **Robert H. Miller** as purchasing agent has been announced by Cooper Alloy Corp., Hillside, N. J. For the past 15 years, Mr. Miller has been associated with Westinghouse Electric Corp. as a buyer. He is a member of the North Jersey Purchasing Agents Association.

R. C. Reynolds has been named purchasing agent for The New London Instrument Co., New London, Conn.

A. Baird Harris has been appointed director of purchases for The Anaconda Co., New York. Mr. Harris joined Anaconda in 1945 as assistant purchasing agent. He has been purchasing agent since 1948. Prior to World War II, Mr. Harris was purchasing agent for IBM.

Harry J. Moore, Jr., has been appointed assistant director of purchasing for International Business Machines Corp., New York. He joined IBM in 1948, as an assistant sales representative in the Los Angeles office. He became manager of the Bakersfield office in 1950, moving to Endicott, N.Y., in 1953, as administrative assistant to the production manager. He was recently manager of personnel division at Endicott.

Frank W. Morton has been named to direct the activities of the purchasing and stores departments of Great Lakes Steel Corp., Ecorse, Mich. He has had 26 years of experience in the department, having started in purchasing as a clerk. He is affiliated with the Purchasing Agents Association of Detroit.

David A. Schiffer has been made eastern manager of raw material purchases for Apex Smelting Co., Chicago. **Eric Windmiller** has been named assistant eastern manager of raw material purchases.

David N. Scott, product manager at the Nashville plant of Solar Steel Corp., Cleveland, has been transferred to the general office for a staff position in the purchasing department.

Proctor Electric Co., Philadelphia, has appointed **Frederick B. M. Cardeza, Jr.,** as purchasing manager. Mr. Cardeza has been with Proctor for the past 20 years, the last 11 in purchasing. He is a member of the Philadelphia Purchasing Agents Association.



A. B. Harris



F. W. Morton



F. B. M. Cardeza



RIEGEL

makes paper for pre-weighed doses of CHEMICALS

Rapidase-Z*a concentrated enzyme powder used in textile processing, is now packaged in small, ready-to-use, pre-measured pouches instead of heavy drums. The new unit-portion pouch saves weighing time, spillage waste,and storage and handling costs. To protect the enzyme, Rapidase-Z uses Pouchpak*. . . laminated glassine poly-coated and printed by Riegel. This is just one more interesting example of Riegel's ability to make paper for industrial needs. Over 600 grades now available. Write Riegel Paper Corp., P.O. Box 250, New York 16, N. Y. *T.M.

Riegel

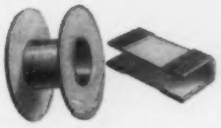
SPECIAL PAPERS FOR INDUSTRY

Our business is making UNUSUAL PAPER for your business

For instance . . . SOLVENT-COATED PAPERS such as



Coated filter stock



Coated electronic board



Coated cover stock



Coated pouch paper



Coated separating paper



Coated drawing board paper

These are just a few examples of Riegel's ability to tailor-make papers for nearly every ordinary or extraordinary industrial need.

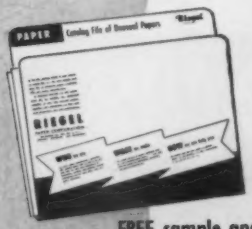
More than 600 grades now made . . . many with technical properties that would amaze you. Tell us what you want paper to do for you . . . Write to Riegel Paper Corporation, 260 Madison Ave., New York 16, N. Y.

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INDUSTRIAL PAPERS

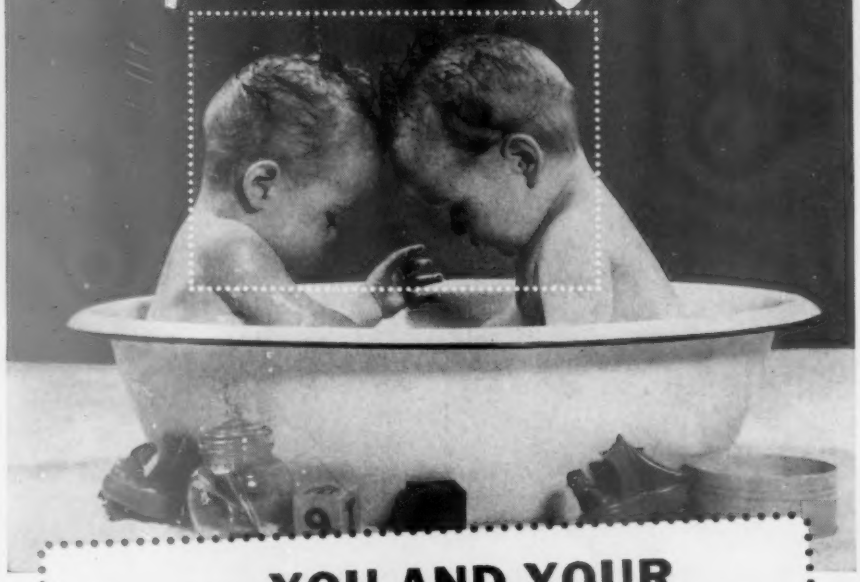
papermaking, impregnating, printing, poly-coating, waxing, laminating



FREE sample and data file of UNUSUAL papers!

For More Information Circle No. 326 on Inquiry Card—Page 17

Put your heads together...



. . . YOU AND YOUR FLEXONICS DISTRIBUTOR and take advantage of his service

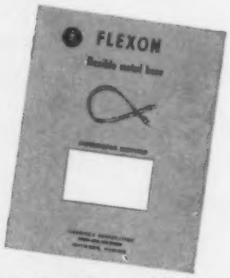
No need for you to be as chummy as these two young 'uns, but we do want to remind you—when you're faced with flexible metal hose problems your Flexonics Distributor is *the* man to consult.

He's a responsible person who handles the most complete line of flexible metal hose products offered by a single manufacturer. His dependability is matched only by that of Flexonics Corporation, itself — and Flexonics products are backed by over 54 years of manufacturing experience. Our program of continuous research and quality control means a product of higher value with lower costs to you in the long run.

Volume production with modern facilities gives you the lowest price consistent with top quality. The long life and maintenance free characteristics of Flexon® hose further reduce your cost.

You can get genuine Flexon Metal Hose *only* from an authorized Flexonics Distributor. Your local distributor is part of a nation-wide network designed to give you "*right now*" service with savings of time, trouble and money. For your further convenience, this service is backed by strategically located warehouse stocks.

Get together with this man who can supply all your metal hose needs from a single, dependable source. He can make your job an easier one.



Catalog 152 gives full data on all types of Flexon hose. Ask your distributor for a copy or write direct.

G-33

FLEXON® QUALITY
proved in service and backed by over 54 years manufacturing experience

Flexonics *Corporation*
CHICAGO METAL HOSE DIVISION
1316 S. THIRD AVENUE, MAYWOOD, ILLINOIS
FORMERLY CHICAGO METAL HOSE CORPORATION
Manufacturers of flexible metal hose and conduit, expansion joints, metallic bellows and assemblies of these components.
In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

For More Information Circle No. 327 on Inquiry Card—Page 17

purchasing people

Pittsburgh Plate Glass Co. has announced the appointments of **Maurice E. Carlisle** and **Alfred D. Nutter, Jr.**, to newly-created posts in the glass division. Mr. Carlisle, formerly general purchasing agent for the glass division, is now manager of construction and purchasing. He joined PPG in 1929 as a draftsman in its general office. He also



A. D. Nutter, Jr.



M. E. Carlisle

served as a buyer prior to his appointment as general purchasing agent in 1942. Mr. Nutter, purchasing agent for the glass division during the past 10 years, is now director of purchases. He joined PPG in 1932 in the accounting department at Ford City, Pa. He transferred to the Pittsburgh office in 1941 as a purchasing agent, two years later being named assistant purchasing agent for the glass division.

Waldemar Rivera-Martino is now purchasing agent for the Economic Development Administration, Commonwealth of Puerto Rico, New York.

Harry A. Jewell has been named director of purchases for the Long Mfg. Division, Borg-Warner Corp., Detroit. He has held a similar post with the B-W Detroit Gear Division since 1951. He has been associated with Borg-Warner for the past 22 years, joining the Norge Division in the post of production manager. He is a member of the Purchasing Agents Association of Detroit.

The story behind a number



THE NUMBER LM11949 on the bearing cone shown above—coupled with LM11910 on the cup—tells a short story. It says it is a tapered roller bearing of a certain size. But since the trade-mark "Timken" is also stamped on the bearing, the number tells a top P. A. even more. It tells the complete story about the bearing's quality and the service that goes with it.



TO CASE-HARDEN EVERY RACE AND ROLLER, we built the world's largest battery of carburizing furnaces, man them 168 hours a week. It's typical of the many costly steps that go into Timken® bearings to put more value into *your* products.



IT HELPS DESIGN TOMORROW'S BEARINGS. Can Timken bearings be made to last even longer? A continuous, large-scale research program is helping us find out. This machine, for instance, tests the effect of vibration on bearings. Quality and service make Timken bearings your number 1 value and their public acceptance helps you sell your Timken bearing equipped products. So when you specify a bearing number, specify "Timken" along with it. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN is number 1 for VALUE

TRADE-MARK REG. U. S. PAT. OFF.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ⊖ AND THRUST ←⊖→ LOADS OR ANY COMBINATION ⊖

For More Information Circle No. 328 on Inquiry Card—Page 17

NOW AVAILABLE!



Carpenter PVC pipe and fittings for cost-saving corrosion control

● Here is a new Carpenter service to help processing plants cut piping costs for handling a wide variety of corrosives under moderate operating temperature and pressure conditions. Carpenter PVC Plastic Pipe and Fittings are admirably suited for such piping requirements because of the excellent corrosion resistance, strength and other desirable properties of the unplasticized polyvinyl chloride from which they are made. They withstand both oxidizing and reducing conditions. For this reason, Carpenter PVC Pipe and Fittings supplement other corrosion-resistant piping materials previously made available by Carpenter research and production advances in stainless and specialty steels.

Two types of Carpenter PVC Pipe and Fittings are available—No. 1 provides outstanding chemical resistance along with high strength, toughness and rigidity. No. 2 provides high impact strength and excellent corrosion resistance. Both types are available in eight pipe sizes of ½" to 4". Pipe is made in Schedules 40 and 80. A full line of Schedule 80 threaded and socket fittings is available.

Easily and economically installed with usual piping tools, Carpenter PVC Pipe and Fittings assure trouble-free service with cost economy. Why not look into the advantages of using Carpenter PVC piping systems in your plant? Consult your nearby Carpenter Distributor or Representative and ask for new Technical Bulletin T.D. 119.

MEMBER

The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

Export Dept.: The Carpenter Steel Co., Port Washington, N.Y.—"CARSTEELCO"

Carpenter

more than corrosion resistance

PVC Pipe and Fittings

For More Information Circle No. 329 on Inquiry Card—Page 17

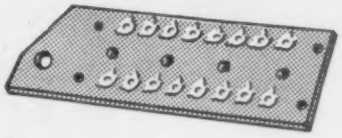
TAYLOR Shop Talk

Laminated Plastics
Vulcanized Fibre

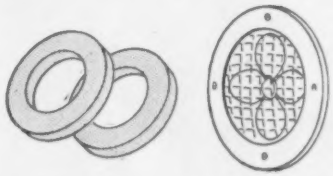
TAYLOR FIBRE CO.
Plants in Norristown, Pa. and La Verne, Calif.

PHENOL—MELAMINE—SILICONE—EPOXY LAMINATES • COMBINATION LAMINATES • VULCANIZED FIBRE • POLYESTER GLASS ROD

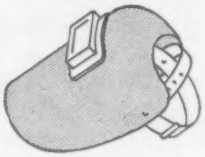
Tips for designers



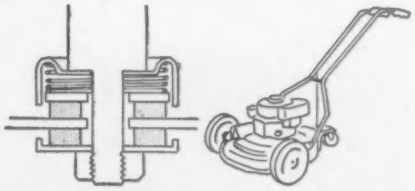
Terminal board for a complex circuit in an electronic spectrophotometer instrument is made of Taylor Grade LE laminate . . . selected for its insulating and mechanical properties.



Large exhaust fans use Taylor paper base phenolic washers to help absorb thrust . . . an inexpensive arrangement, with long life.



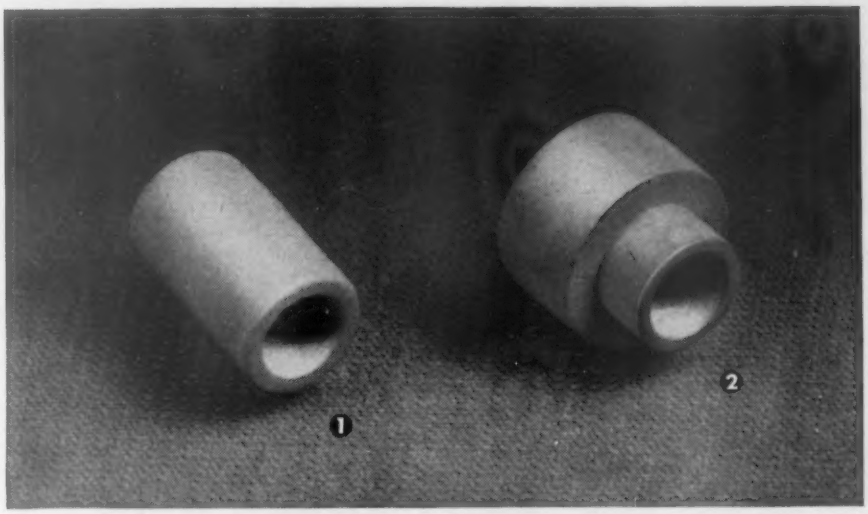
Welders' helmets are fabricated from tough, durable Taylor vulcanized fibre . . . readily formed to many desired contours.



Rotary lawn mower utilizes abrasion resistance of Taylor phenolic laminate washer in slip-clutch attachment of drive shaft to cutting blade.

TAYLOR FABRICATING FACILITIES

Your production problems can often be simplified . . . schedules safeguarded . . . inventory headaches cured . . . and overall costs reduced by having Taylor fabricate finished parts of vulcanized fibre and laminates to your specifications. Efficient, modern facilities are ready to serve you. Write to Taylor about your specific requirements.



Chosen for its mechanical strength and electrical insulation, this Taylor laminated tubing provides an economical means for making (1) an ignition breaker arm bushing and (2) a distributor terminal bushing.

Strength plus electrical insulation, available in Taylor laminated tubing

Among the most versatile basic materials available to the designer, Taylor laminated plastics are constantly finding new applications . . . in new products for future markets and as replacements for parts in current production.

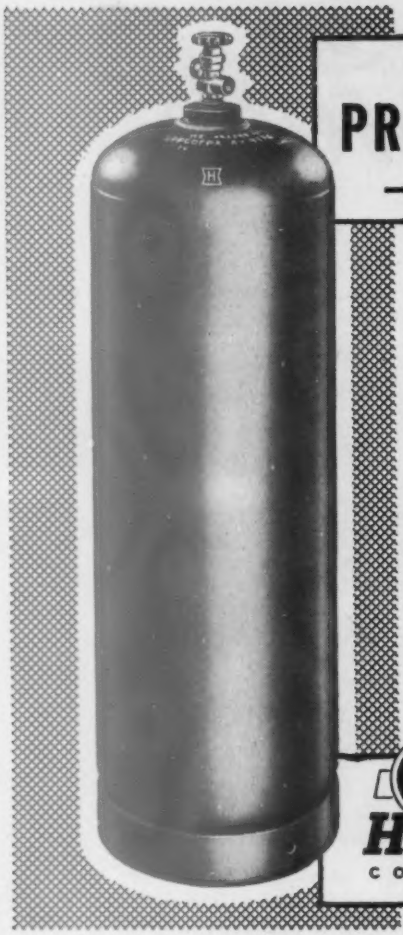
Widely used in flat sheets for the fabrication of parts for electrical components, Taylor laminates are also available in tube form. This makes them applicable to an even greater number of parts . . . such as bushings, guides, shafts, and housings for resistors, thermistors and fuses. The tubes are supplied with inside diameters as small as $\frac{3}{32}$″. Standard lengths are 36″ or 49″, depending on grade, inside diameter and wall thicknesses.

Included in the broad selection of Taylor laminated tubing are a great variety of different grades . . . paper, fabric and glass bases combined with special formulations of phenol, melamine, silicone and epoxy resins. Each grade offers electrical and physical properties which qualify it for a specific application at a reasonable price.

Of particular interest to economy-minded designers and production managers is the fact that this laminated tubing permits the use of a part for a mechanical application without the need for extra electrical insulation.

Plan to take greater advantage of Taylor laminates . . . in tube, sheet and rod form . . . either in your present products or in those which you are now designing. Call or write for a discussion of your specific requirements.

For More Information Circle No. 330 on Inquiry Card—Page 17



For the best buy in

PROPANE CYLINDERS

—look for this trade-mark

It is a real achievement to produce a Propane Cylinder of Harrisburg Lite-Weight quality to sell for its low price. Only a company whose major business is the manufacture of the finest gas cylinders for domestic and industrial use, could do it.

Harrisburg Lite-Weight Propane Cylinders are made to ICC Specification 4BA-240. And they are not made on a "just-barely-meet-the-specifications" basis, either. Top quality materials and construction provide a generous margin of safety and durability that means substantial savings to the user in the beginning and increasing throughout successive inspection periods.

For full information send for our Bulletin 466.

More than a century in Harrisburg

Harrisburg Steel
CORPORATION
HARRISBURG 19
PENNSYLVANIA

For More Information Circle No. 331 on Inquiry Card—Page 17



"Our job's to 'deliver the goods'

Keeps us going all day to get shipments out on time, but we do get a break. . . when we need cool water we can count on Halsey Taylor."

Wherever they're installed, they're the workers' favorites, because Halsey-Taylor Coolers are dependable. Contamination-proof, economical in operation, free from servicing troubles.

The Halsey W. Taylor Co., Warren, O.

SEE OUR CATALOG IN SWEET'S

HALSEY TAYLOR

Industry's Favorite Coolers

F-60

Cooler Shown: Stainless Steel Top

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purchasing people

James T. Morrison has been appointed director of purchasing for The White Motor Co., Cleveland. Mr. Morrison has been with Baldwin-Lima-Hamilton Corp. for the



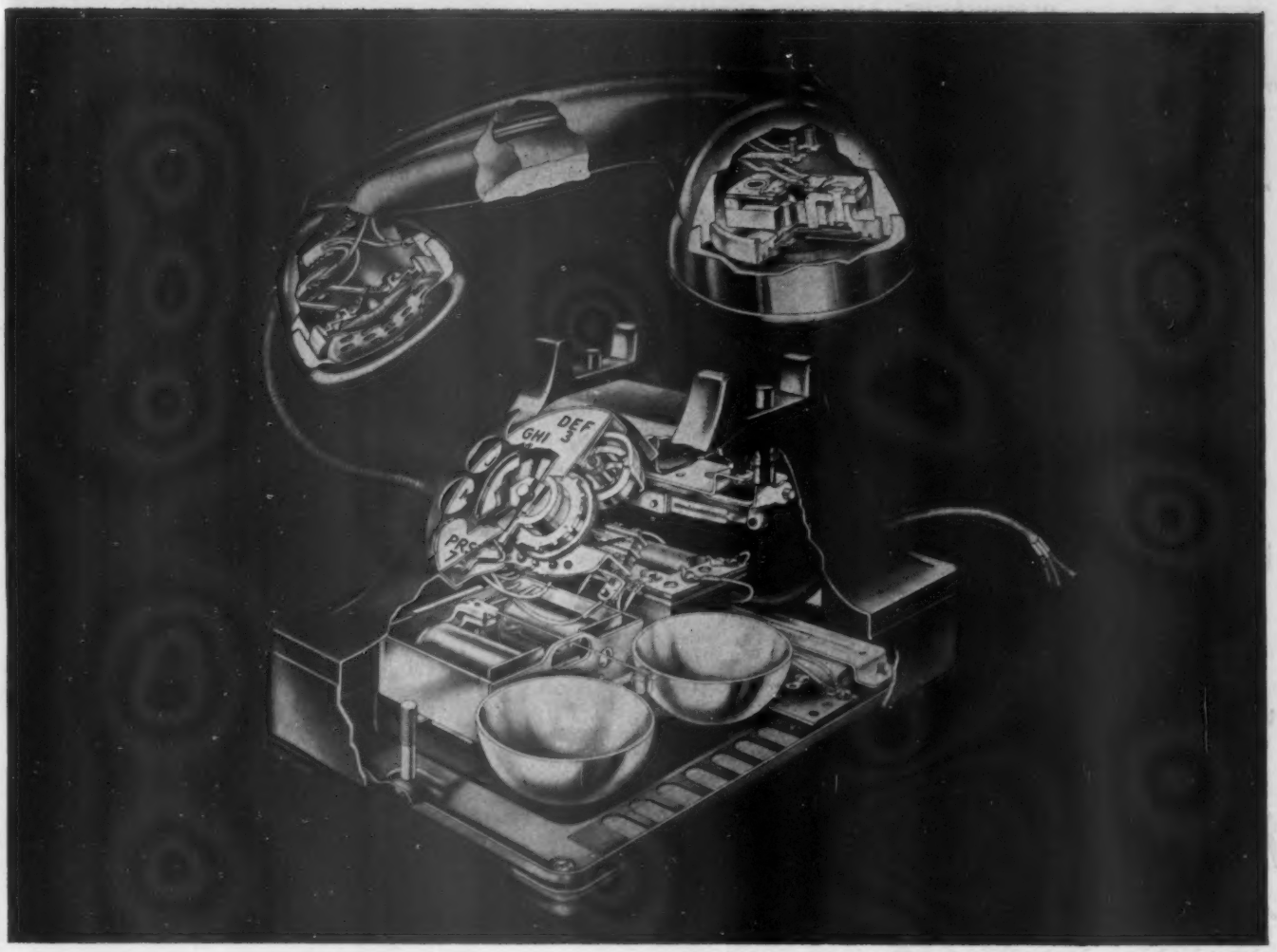
J. T. Morrison

past 20 years in various official capacities. His latest assignment was as purchasing agent for B-L-H Eddystone (Pa.) division. He is a member of the Purchasing Agents Association of Philadelphia, and past chairman of the N.A.P.A. national committee on steel.



J. K. Andrew

Fugle - Miller Laboratories, Clark, N. J., has named **J. Kenneth Andrew** as buyer. He will handle all purchasing for the company. He has been with Fugle-Miller for the past four years.



In critical places your telephone uses COPPER . . . for space-saving, for high electrical conductivity and ease of joining, for dependable performance.

COPPER

speaks for itself!

Everyone who uses copper learns something from it . . . something no substitute can teach.

To the man who machines or stamps or draws metals, copper and its alloys speak of easy workability.

To the firm that uses copper parts instead of substitutes, copper tells the story of satisfaction . . . of standing up in service.

To the designer of complicated equipment, copper offers savings in valuable space . . . permits "miniaturization".

And to the home-owner wise enough to install copper throughout his "castle", time itself tells an unending tale of trouble-free enjoyment.

Copper will speak for your product, too. It will signify *quality!*

It costs you less to make your product well, before it is sold . . . than to make it good, afterwards.

COPPER & BRASS
RESEARCH ASSOCIATION

420 Lexington Avenue, New York 17, N. Y.

. . . AN INDUSTRY SOURCE OF TECHNOLOGICAL AID, INCLUDING A LIBRARY OF TECHNICAL LITERATURE AND A COUNCIL OF SPECIALISTS

COPPER OR ITS ALLOYS PROVIDE THESE ADVANTAGES:

Best conductor of electricity commercially available

Does not rust . . . high corrosion resistance

Best heat transfer agent of all commercial metals

Easy to machine, form, draw, stamp, polish, plate, etc.

Welds readily . . . excellent for soldering and brazing

For More Information Circle No. 333 on Inquiry Card—Page 17



Sure, we want to sell you Diamond Tools! However, we also feel there is a definite need of knowledge as to how to take care of the Diamond Tools you already own. That's why we have compiled, edited and printed a booklet which will help you with your diamond tool care and maintenance problems. It's yours for the asking. Merely write for your copy of "The Care and Maintenance of Diamond Tools."

And—when you're again ready to replace wornout tools and if you require engineering advice on industrial diamond products, consult J. K. Smit & Sons . . . We've been in this business since 1888.



Stakeot Model

Cluster Model



J. K. SMIT & SONS, INC.
HOME OFFICE AND PLANT
MURRAY HILL NEW JERSEY

Additional plants in London, Paris, Amsterdam and Toronto, Canada

For More Information Circle No. 334 on Inquiry Card—Page 17

purchasing people

SKF Industries, Inc., Philadelphia, has appointed **William A. Sine, Jr.**, as general supervisor production material control and procurement. He has been a member of the SKF purchasing staff for a number of years.

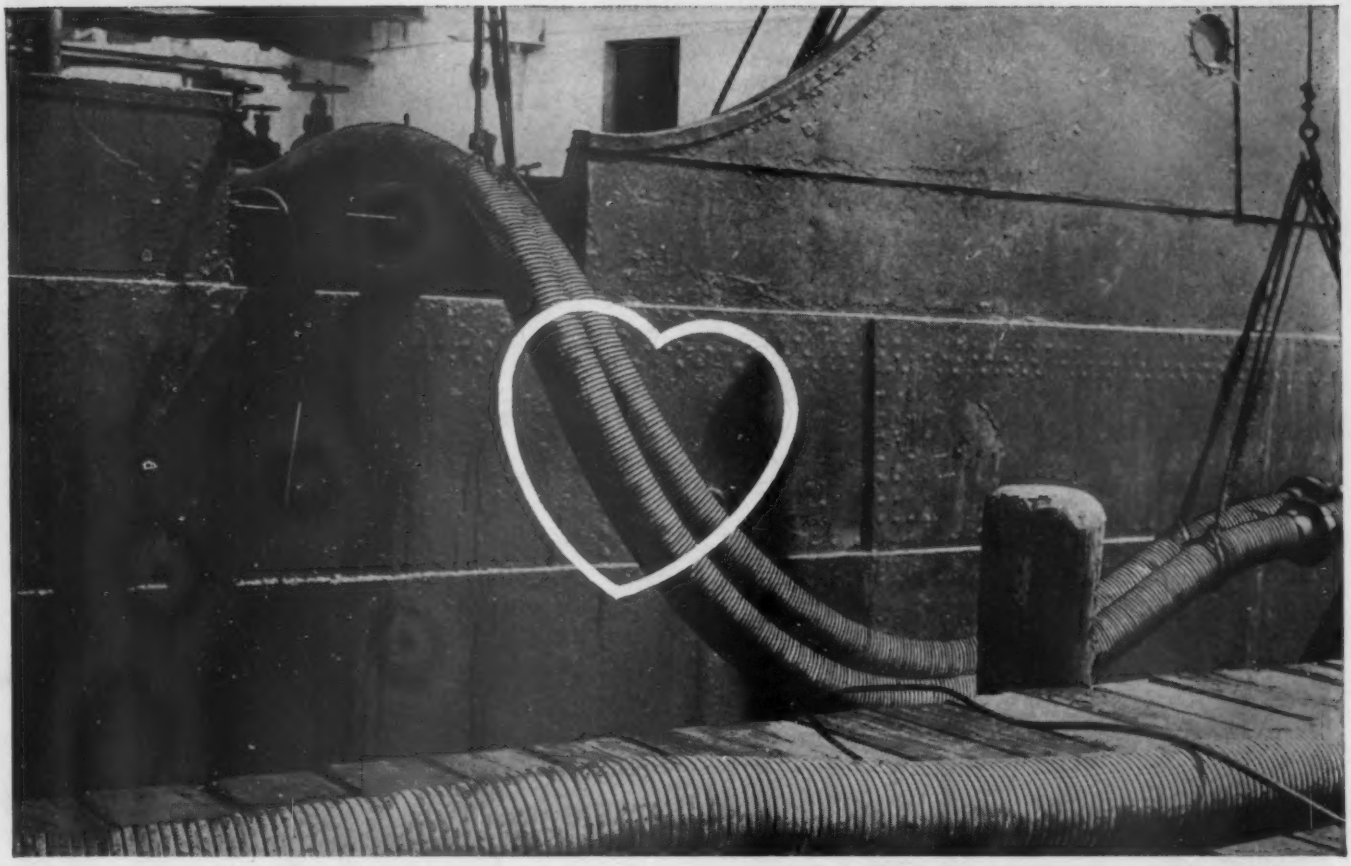
Angier Corp., Framingham, Mass., has named **Victor Schiesske** as purchasing agent and traffic manager. He succeeds



V. Schiesske

Leonard F. Hanna, who was recently named assistant treasurer. Mr. Schiesske joined Angier in 1954 as warehousing, receiving and storage supervisor. He was formerly traffic manager at Eastern Co., Cambridge, Mass.

Neil Stitsinger has been named purchasing agent for The Mosler Safe Co., Hamilton, O. Mr. Stitsinger has been with Mosler for 27 years, during which time he has been in both production and purchasing posts. For the past 18 years, he has served as assistant purchasing agent. Mr. L. F. Bartels, who has served for the past 28 years as purchasing agent and erection superintendent, is now manager of the newly organized Erection Division.



BLACK GOLD, BLACKSTRAP OR BLACK DIAMONDS ...PENFLEX MOVES IT, AFLOAT OR ASHORE

Whether cargo is a reasonably heavy liquid like crude oil . . . tacky like blackstrap molasses . . . semi-solid like asphalt . . . a granular solid like coal . . . it finds smooth passage through Penflex tubing. It can be non-combustible or highly volatile . . . Penflex leak-proof construction makes any transfer safe.

Being flexible, Penflex tubing "gives" . . . rides with the tide in ship unloading . . . simplifies transfer from railroad cars and tank trucks . . . enables stationary tanks to settle or "move" with temperature changes, without breaking their connecting transfer lines.

It's rugged too . . . outlasts by far any solid piping or other types of hose in moving abrasive solids like coal, sand or copra.

These combined features give Penflex numerous applications . . . as air intake or exhaust lines on Diesels and compressors, expansion joints on steam lines, piping for gases, water and all kinds of fuel and lube oils.

You'll get some ideas on applying Penflex from the booklet "FLEXINEERING," which shows some of the types available and typical uses. Write today for your copy.

Pennsylvania Flexible Metallic Tubing Company, Inc., 7218 Powers Lane, Philadelphia 42, Penna. • *Branch Sales Offices:* Boston New York • Chicago • Houston • Cleveland and Distributors in Principal Cities

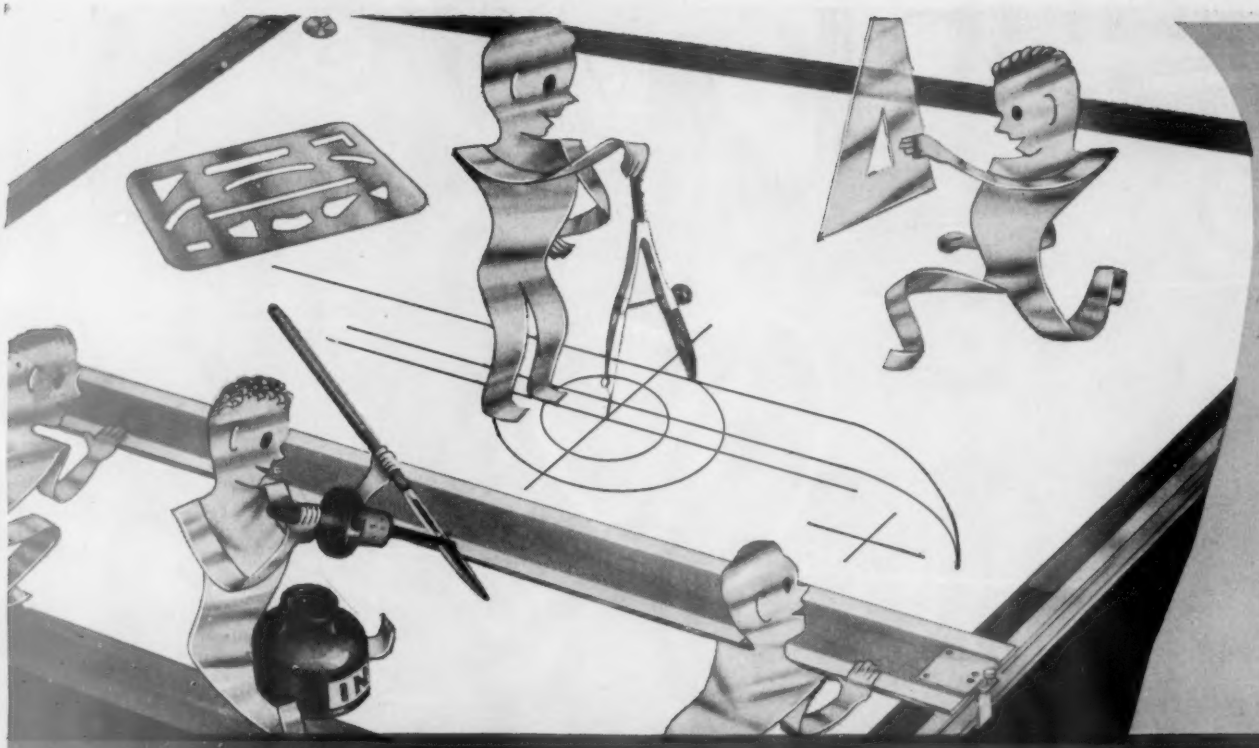
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PENFLEX

HEART OF INDUSTRY'S LIFELINES

FLEXIBLE TUBING, AUTOMATIC BARREL FILLERS, PNEUMATIC RIVET PASSERS, ACCESSORIES AND FITTINGS

For More Information Circle No. 335 on Inquiry Card—Page 17



OTHER PEOPLES'

"Problem Parts"

ARE OUR EVERYDAY BUSINESS

Find yourself stumped for a dependable source of supply on some particular tricky component? If it can be blanked, formed, set or stamped of aluminum or stainless steel, on high-speed equipment, we can engineer an economical, mass-production procedure for making it.

Possibly, there's an unusual curvature to handle, a difficult joining or closing operation. Our engineers and technicians are constantly noodling out new ways and means, all in the day's work.

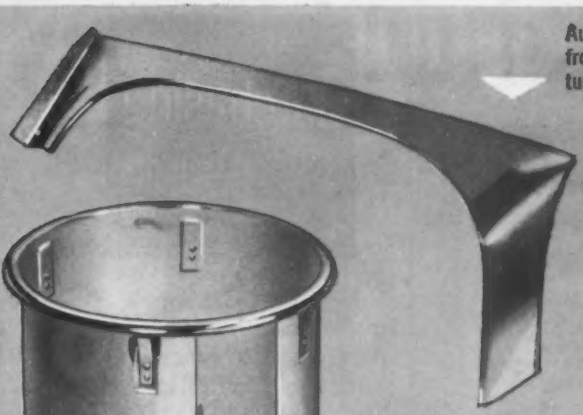
Whatever problems ***your*** "problem parts" present, let us have a crack at them. A call or letter will get you interested attention, at once.

Contract Division

ALUMINUM GOODS

Manufacturing Company

MANITOWOC, WISCONSIN



Automobile windshield side-moulding. Formed from stainless steel sheet. Complicated curvature pattern. Bright polish finish. Rustproof.

Deep drawn aluminum shell (housing), in one piece. Smooth, rounded flange. Rustproof, lightweight. Many stock sizes and shapes available or custom-drawn to your specifications.



Outboard motor fuel tank. Welded assembly of two drawn aluminum shells and machined fittings. Lightweight, corrosion proof. Baked enamel finish.



Toaster-broiler cover. One-piece stamped construction. Good looking corner radii—easily cleaned—no seams. Beautifully finished on specially designed equipment.

Deepwell cooker assembly, for the modern range. Available from selection of standard parts. Attractive covers. Various convenient inset utensils. Slight changes possible, in housing, pots, insets, covers, to suit your needs.





Griddle-grill, range equipment. Stamped from thick, easy-to-clean aluminum sheet, yet light to handle. Quick, even-heating alloy assures constant temperature over surface area.

- Large Fabricating Plants and Rolling Mill
- Over 1,640,000 Square Feet of Factory Floor Space
- Complete Technical Services
- Complete Finishing Facilities
- Long Service-Record of Experienced Employees
- 60 Years of Service to Industry



ALSO MAKERS OF

MIRRO

The Finest Aluminum Cooking Utensils



Range and washer backguard trim. Roll formed, end-closed by press operation. Two-tone finish achieved by mechanical processes.

For More Information Circle No. 336 on Inquiry Card—Page 17

the NEW USG

SUPERGAUGE®



...built

to last a lifetime!

With proper application, the new USG Supergauge will last a lifetime!

SEGMENT—stainless steel, with nylon-faced gear section. Nylon-to-metal bond stabilizes the nylon against expansion and contraction . . . maintains accurate pitch diameter . . . assures proper mesh with stainless steel pinion under severe temperature and moisture conditions.

MONO-UNIT CONSTRUCTION—permits easy removal of complete gauge assembly for inspection and adjustment.

ARC-LOC MOVEMENT—permits all calibration adjustments of gauge assembly from rear without removing dial and pointer.

LEGEND ON DIAL—gives complete description of socket, Bourdon tube and movement material for ready identification.

MICROMETER ADJUSTABLE SELF-LOCKING POINTER—permits accurate repositioning of pointer.

These features are also available in USG Solfrunt Gauges with solid front construction.

Supergauges available in 4½", 6", and 8½" sizes. For complete information on case styles, materials of construction and connections write for Publication 1819.

UNITED STATES GAUGE

Gauge Headquarters FOR OVER 50 YEARS

Home of the SUPERGAUGE

Division of American Machine and Metals, Inc., Sellersville, Pa.

For More Information Circle No. 337 on Inquiry Card—Page 17

purchasing people

Herbert C. Towle has been made purchasing agent for Exeter & Hampton Electric Co., Fitchburg Gas and Electric Light Co.,



H. C. Towle

and Springfield Gas Light Co., all in Massachusetts. He has been associated with the companies for the past 22 years, having been assistant purchasing agent since 1952.



D. Robertson

The appointment of **Donald Robertson** as purchasing agent has been announced by Colonial Broach & Machine Co., Detroit. Mr. Robertson has been with the company for 14 years, the last five as a buyer.

Powell Lubricated Plug Valves

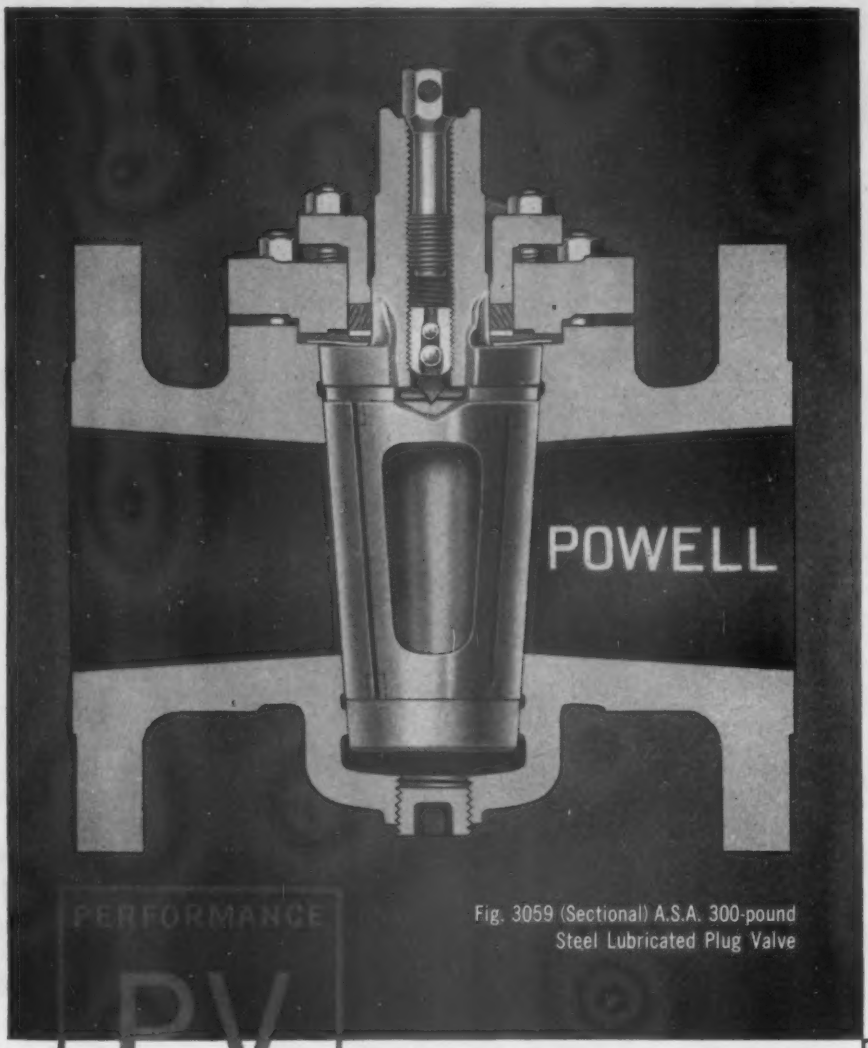


Fig. 3059 (Sectional) A.S.A. 300-pound Steel Lubricated Plug Valve



FIG. 1559G—150-pound Steel Lubricated Plug Valve. Gear operated



FIG. 2200—175-pound W.O.G. Semi-Steel Lubricated Plug Valve

Powell Lubricated Plug Valves maintain the 110-year tradition of quality and precision. Only the finest available materials are used. And painstaking quality control is rigidly enforced through each and every step of manufacture.

Valve users who want one source of supply for lubricated plug as well as all types of bronze, iron, steel and corrosion-resistant valves will want full details on Powell Lubricated Plug Valves.

For example, features include quick and positive operation—just a quarter-turn to open or close. Lubricant grooves surrounding each port provide a positive seal when the valve is closed. In an open position, seating surfaces are not exposed. Available in Steel and Semi-Steel through distributors in principal cities.

For full details, write for the new PV-4 Catalog on Powell Lubricated Plug Valves. Just fill out the coupon and mail. Of course there's no charge, no obligation.

THE WM. POWELL COMPANY
2525 Spring Grove Ave.
Cincinnati 22, Ohio

Gentlemen:

Please send me a copy of your PV-4 Catalog on Powell Lubricated Plug Valves. It is understood that there is no cost, no obligation.

*name*_____

*title*_____

*company*_____

*city*_____

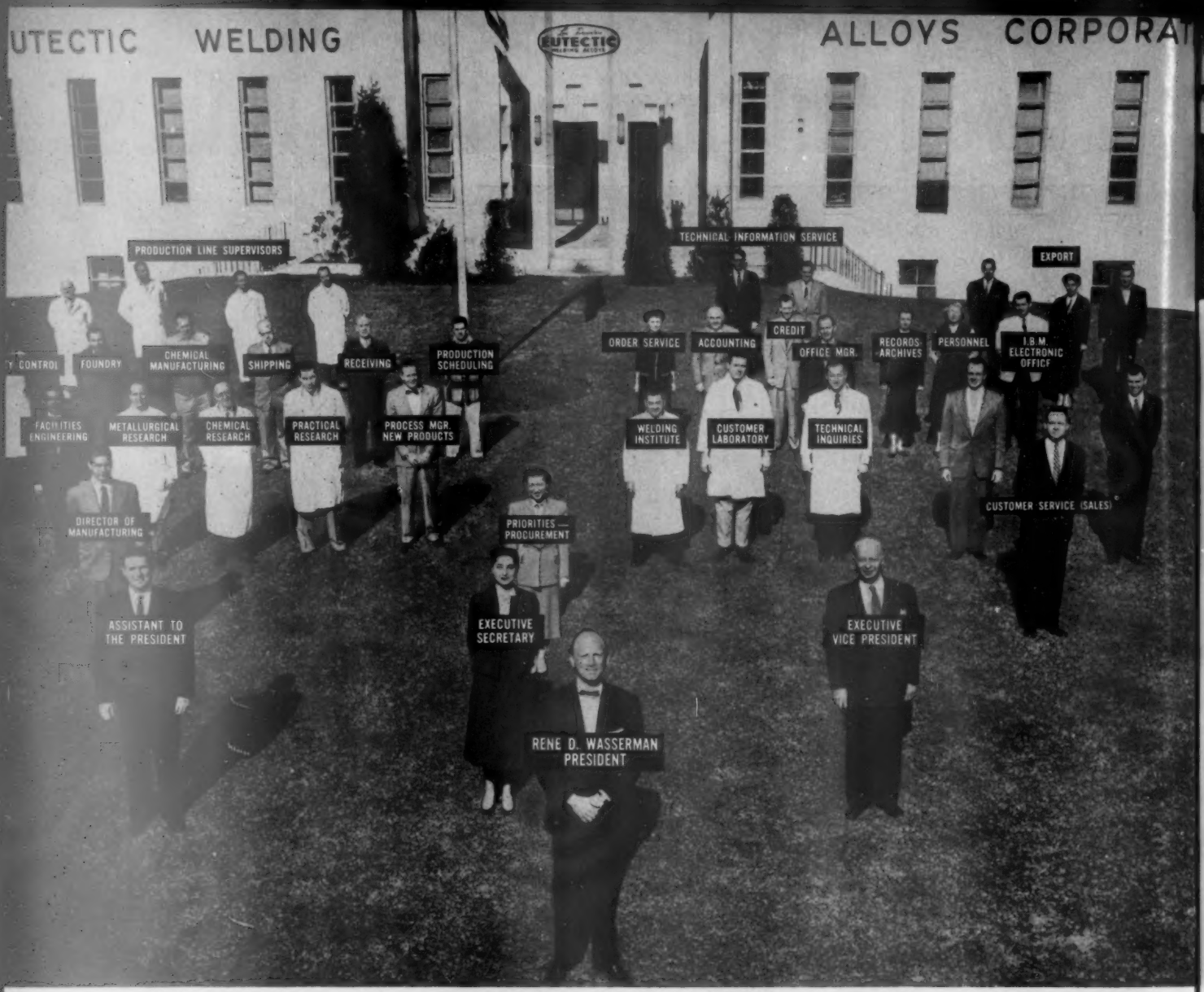
*zone*_____ *state*_____

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POWELL VALVES...110th YEAR

BRONZE, IRON, STEEL AND CORROSION RESISTANT VALVES.

For More Information Circle No. 338 on Inquiry Card—Page 17



MORE FOR YOUR WELDING DOLLAR

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Take advantage of this direct source of greater profits from welding. Let your Eutectic representative give you a free demonstration in your shop, on your materials. Phone your nearest source of Eutectic service today . . . see the handy list at the right.



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CHICAGO, ILL.	**Regent 1-2424**
Cincinnati, Ohio	Main 8404
Cleveland, Ohio	PR. 1-1993
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Louisville, Ky.	Jackson 6673, 8449
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Pittsburgh, Pa.	Grant 1-9522
Portland, Ore.	Capital 3-6393
Reading, Pa.	Reading 4-3904
St. Louis, Mo.	Taylor 15508 (Kirkwood)
Salt Lake City, Utah	9-8731
San Francisco, Cal.	Douglas 2-7485
Syracuse, N. Y.	Syracuse 54-3595 (Liverpool)
Toronto, Ont.	Empire 8-1343
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purchasing people

Elwood C. Burgstone has been named general purchasing agent for National Can Corp., Chicago. He is succeeded as purchasing agent for the "Kedzie" plant by **Thomas J. Parchem.** Mr. Burgstone has been with the company since 1951, having started with Cans Inc. as a buyer and purchasing clerk. Mr. Parchem joined National Can in 1951, also. He has held a number of posts in manufacturing and engineering in the company.



H. M. Morrison

True Temper Corp., Cleveland, has named **Howard M. Morrison** as purchasing agent, succeeding the late E. C. Pike. Mr. Morrison has been in the company's purchasing department since 1942.

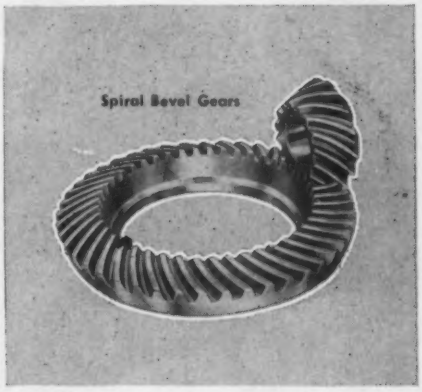
The appointment of **George E. Powell** as purchasing agent has been announced by Fansteel Metallurgical Corp., North Chicago, Ill. Mr. Powell joined Fansteel in 1942, having been in charge of procurement for Vascoloy-Ramet Corp., a Fansteel subsidiary, during the war years. **George C. Conner** has been named assistant purchasing agent. He joined Fansteel several years ago, having been with Bell & Howell in Chicago.

For More Information Circle No. 339
←on Inquiry Card—Page 17

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ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
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BALTIMORE • CLEVELAND
Virginia Gear & Machine Corp., Lynchburg, Va.
Industrial Gears & Speed Reducers • LimiTorque Valve Controls
Established 1892

For More Information Circle No. 340
on Inquiry Card—Page 17

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FOR CONVEYING . . .



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Act today. Write for Data Sheets and help.

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If you have a conveying problem — send us your drawings and specifications. Our technical men will tell you in a hurry what Acme can do to solve your problems. No obligation at all to find out how to get the most for your money with top performance.



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604 Lever Street Trenton, N. J.

For More Information Circle No. 341 on Inquiry Card—Page 17

purchasing people

The appointment of **James J. Lynch** as purchasing agent for The Rap-in-Wax Paper Co., Minneapolis, has been announced. He has been with the firm since 1943, serving as traffic manager and most recently, assistant purchasing agent.



J. J. Lynch



S. T. Lucas

Steve T. Lucas, formerly a buyer for Mine Safety Appliance Co., Pittsburgh, has joined the purchasing staff of General Molds & Plastics Corp., Pittsburgh. His new assignment is as a technical buyer.

SEE PAGE 17 FOR POST CARD



Save work space—save worker's time—with

NEW KIMWIPES DISPENSERS



Save money, too, with Kimwipes in the new Dispenser-Pack

KEEP work area clear—put wipers within time-saving reach—with these new Kimwipes dispensers. They're all metal—equipped with a lock and key. Hold the new economical Dispenser-Pack of 200 Kimwipes. And these new dispensers serve workers one wiper at a time—not a wasteful handful. Ask your supplier about these new Kimwipes dispensers. Or write to Kimberly-Clark, Dept. P-46, Neenah, Wisconsin.

Kimwipes are softer! Kimwipes conform better to any surface. No stiff creases to streak or scratch. Kimwipes wipe clean without linting—give you up to 10 times more wiping area for your dollar than laundered cloth.

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No other disposable wipers can wipe so clean so fast!

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For More Information Circle No. 342 on Inquiry Card—Page 17

BUY WATER COOLERS ...BY THEIR GUARANTY



Electric water coolers look and operate pretty much the same . . . but there's a big, and frequently invisible difference—the guaranty backing up their performance. There are guarantees, *and* guarantees . . . but only one manufacturer dares to offer a guaranty with *real,* broad protection. Why?

The reason is simple: Only one manufacturer is so confident of superior cooler performance and construction that he does not hesitate to back it up with the strongest, most protective guaranty in the industry. This is the *one* manufacturer with over 65 years' experience in water coolers *exclusively*—over 1,000,000 sold throughout the world.

But don't take our word for it . . . prove it to yourself. For your copy of the best guaranty offered on *any* cooler, and Bulletin E-6 write today to Cordley & Hayes, 443 Fourth Ave., New York 16, N. Y.

1231

Cordley NEW YORK

For More Information Circle No. 343 on Inquiry Card—Page 17

purchasing people

Keco Industries, Inc., Cincinnati, has named **Robert J. Cawdor** as purchasing agent.



A. Forbes

Sawyer's, Inc., Portland, Ore., has named **Andrew Forbes** as purchasing agent.

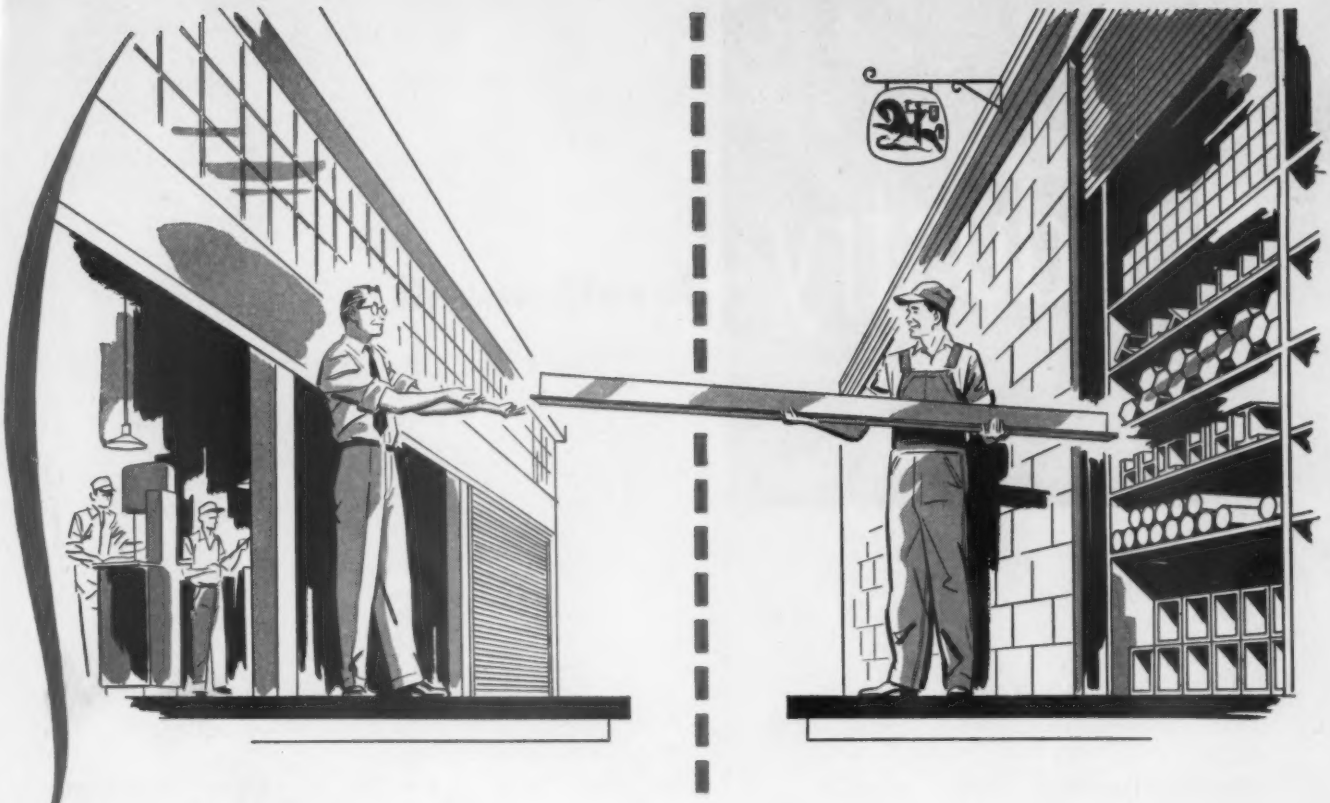
National Lock Co., Rockford, Ill., has appointed **C. M. Oberling** as director of purchases, **Carl Stokstad** as purchasing agent, and **Richard E. Smith** as assistant purchasing agent. Mr. Oberling joined National Lock in 1937 as purchasing agent. He was the first president of the Rock River Valley Association of Purchasing Agents. In 1944, he was made vice president of District 3, N.A.P.A. Mr. Stokstad started with National Lock in 1927, in the service store department. He later became production manager of the Screw and Bolt Division. For the past 15 years he has been in the purchasing department. Mr. Smith has been with the company since 1936, having started in the stock records department. Later, he was supervisor of the statistical department, and worked in the accounting department. He has been in the purchasing department since 1942.

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Braico Metals, Inc., *Los Angeles
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Pioneer Aluminum Supply Co., *Los Angeles
Turner Metal Supply Co., (Wire, Rod, Bar) *Huntington Park
United States Steel Supply Div., Los Angeles
COLORADO
M. L. Foss, Inc., *Denver
CONNECTICUT
American Steel & Aluminum Corp., *Hartford
Peter A. Frasse & Co., Hartford
Scovill Mfg. Co., (Wire, Rod, Bar) *Waterbury
FLORIDA
Southern States Iron Roofing Co., Jacksonville, Miami, Orlando and Tampa
GEORGIA
Southern States Iron Roofing Co., Atlanta and *Savannah
ILLINOIS
Aluminum Distributors Inc., *Chicago
J. G. Braun Co., (Architectural only) Chicago
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Kasle Steel Corporation, Elkhart
KANSAS
Industrial Metals, Inc., Wichita
KENTUCKY
Cobb Sales Co., (Wire, Rod, Bar) *Louisville
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LOUISIANA
Southern States Iron Roofing Co., New Orleans
MARYLAND
Clendenin Bros., Inc., *Baltimore
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Jos. T. Ryerson & Son., Inc., Boston
MICHIGAN
Kasle Steel Corporation, *Detroit and Grand Rapids
McDonnell Bros., Inc., (Architectural only) *Detroit
Meier Brass & Aluminum Co., *Detroit
MINNESOTA
MacArthur Co., (Architectural only), *St. Paul
United States Steel Supply Div., St. Paul
Vincent Brass & Copper Co., *Minneapolis
MISSOURI
Industrial Metals, Inc., *Kansas City and St. Louis
United States Steel Supply Div., St. Louis
NEW JERSEY
Edgcomb Steel and Aluminum Corp., *Hillside
Peter A. Frasse & Co., Lyndhurst
Mapes & Sprowl Steel Co., *Union
Ray Miller, Inc., (Tubing & Pipe) *Newark
NEW YORK
J. G. Braun Co., (Architectural only) *New York
Edgcomb Steel and Aluminum Corp., Hillside, N. J.
Peter A. Frasse & Co., Buffalo, *New York, Rochester, Syracuse
Mapes & Sprowl Steel Co., Union, N. J.
Ontario Metal Supply, Inc., (Wire, Rod, Bar) *Rochester
NORTH CAROLINA
Southern States Iron Roofing Co., Raleigh
OHIO
Kasle Steel Corporation, Cleveland
Mutual Manufacturing & Supply Co., *Cincinnati
Vorys Brothers, Inc., *Columbus
OREGON
Clingan & Fortier, Inc., Portland
PENNSYLVANIA
Athos Steel Service Co., *Philadelphia
Peter A. Frasse & Co., Philadelphia
Merchant & Evans Co., *Philadelphia
Penna. Industrial Supplies Co., Inc., *Pittsburgh
RHODE ISLAND
The Congdon & Carpenter Co., *Providence
SOUTH CAROLINA
Southern States Iron Roofing Co., Columbia
TENNESSEE
Southern States Iron Roofing Co., Memphis and Nashville
TEXAS
Allied Metals Inc., *Houston
Moncrief-Lenoir Mfg. Co., Dallas, Harlingen, *Houston, Lubbock, San Antonio and Temple
Vinson Steel and Aluminum Co., *Dallas
UTAH
Salt Lake Hardware Co., *Salt Lake City
VIRGINIA
Southern States Iron Roofing Co., Richmond
WASHINGTON
Clingan & Fortier, Inc., Seattle
WISCONSIN
Wisconsin Bridge & Iron Co., (Architectural only), *Milwaukee
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Louisville 1, Kentucky.



Call your nearest Reynolds Distributor, listed in the adjoining column, for his aluminum stock list and assistance on your problem.

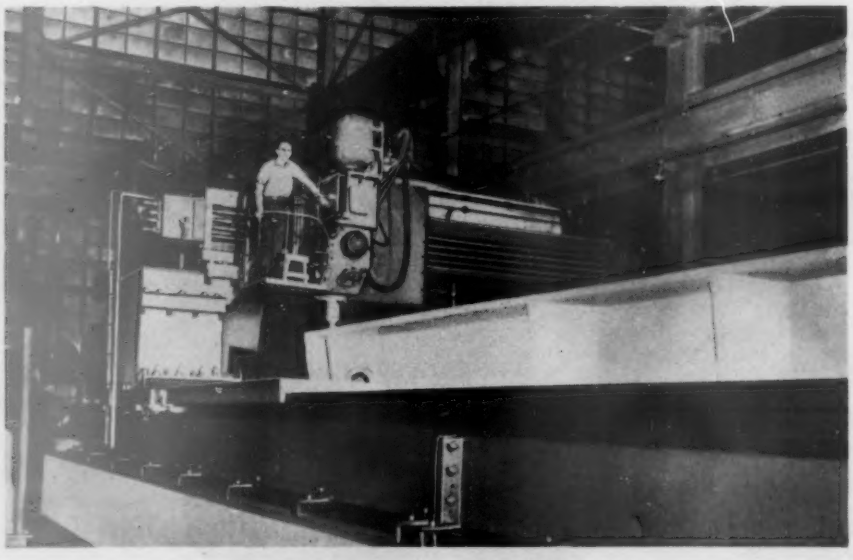
The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

For More Information Circle No. 344 on Inquiry Card—Page 17

industry developments

Baldwin-Lima-Hamilton Corp., Philadelphia, has dissolved four wholly-owned subsidiaries, operating as independent companies, to integrate them more closely into the national organization as divisional units. They are: Austin-Western Co., Aurora, Ill., now the B-L-H Austin-Western Works; Hydropress, Inc., New York, now the B-L-H Loewy-Hydropress Division; Pelton Water Wheel Co., San Francisco, now the B-L-H Pelton Division; and O. S. Peters Co., Washington, D. C., now the O. S. Peters plant of the B-L-H Electronics and Instrumentation Division.

Borg-Warner Corp., Chicago, has announced a major expansion in the plastics field with the appropriation of $10,000,000 for the erection of a chemical plant at Washington, W. Va. The new plant will be a major producer of Cycolac, a high-impact thermoplastic resin developed and produced by the Marbon Chemical Division of Borg-Warner.



COMPLETELY HYDRAULICALLY-DRIVEN, this 17′ x 70′ gantry type milling machine, believed to be the largest of its type in the U. S., uses an equalizing system to prevent see-sawing in its longitudinal travel. Built by Portland Machine Tool Works, S. Portland, Me., it travels along 70 ft. long ways with an insured accuracy of .002″ in parallelism.

Details of **Olin Mathieson Chemical Corp., New York,** plans to enter the aluminum industry with a fully integrated aluminum plant have been announced. An investment of $120,000,000 covers $90,000,000 for the plant and $30,000,000 for power facilities.

The newly formed **Overton Gear and Tool Corp., Chicago,** has completed installation of its equipment in its new plant. The plant will manufacture spur and helical gears, both internal and external, from any ferrous or nonferrous metal, composition or plastic.

Selas Corp. of America, has moved from its Philadelphia site to a new million-dollar plant in the suburbs, Dresher, Pa.

Another step in an expansion program for increased production of ethylene oxide has been announced by **Carbide and Carbon Chemicals Co., division of Union Carbide and Carbon Corp., New York.** Provision for the additional production of 65 million pounds of ethylene glycol, per year, at Seadrift, Texas, ups the total capacity for ethylene oxide in the plant to 200 million pounds per year. Completion of the new facilities at Seadrift is scheduled for this fall.

Now...a New advance in... Gauge Safety!



Another step ahead in Marsh Gauges: the new Marsh "Safecase". Down to the final detail this gauge is developed for those applications where an unexpected surge of heavy, explosive over-pressure can occur.

In the "Safecase" a solid metal barrier protects the entire face. But, still more important, the *entire back* of the gauge is a thin, ductile plate, designed to open out when subjected to abnormal pressure. Back plate is held firmly to the case by two holding screws and cannot be dislodged by a pressure blowout.

In exhaustive tests it has never been possible to shatter the crystal or create any other dangerous condition in a "Safecase" gauge with its safety-release back. The accompanying illustration shows the result of one of a series of tests in which blank cartridges were fired in the back of the case without even breaking the crystal. Think what that means in safety to operating men!

Yes, an important development . . . but merely the kind you would expect from the manufacturer who originated the "Connoweld" tube, the "Marshalloy" case, the Mastergauge movement and practically all of the major advancements in pressure gauges. Ask for up-to-the-minute information.



Pressure of explosive force merely opens out safety back

Instead of depending on blow-out plugs, entire back of Safecase Gauge is designed to yield to over-pressure. Photo at left shows actual result of firing cartridge within back of case. Safety-release back exhausted pressure. Front remained intact.

MARSH INSTRUMENT CO.
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Dept. G, Skokie, Ill.
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Marsh Instrument & Valve Co. (Canada) Ltd.,
8407 103rd St., Edmonton, Alberta, Canada

"THE STANDARD OF ACCURACY"

MARSH GAUGES

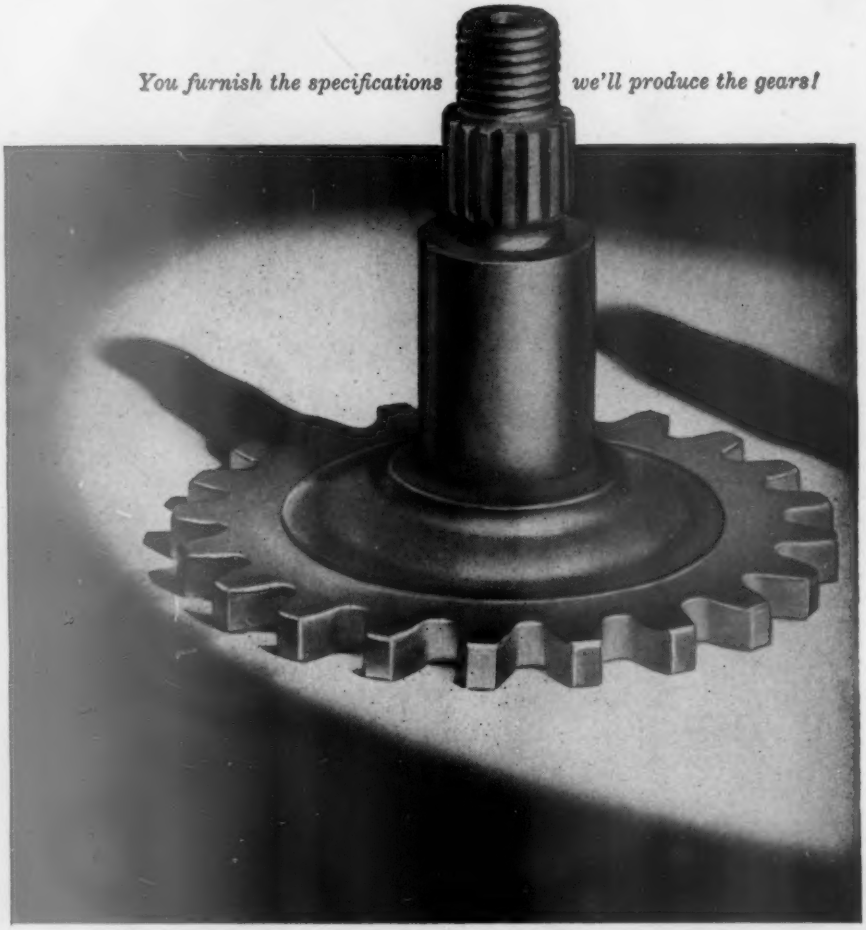
For More Information Circle No. 346 on Inquiry Card—Page 17

Perkins custom-made Gears *make any device—big or small, simple or complex—*

more efficient, more serviceable, more saleable . . .

because every human and mechanical advantage in Gear Making goes into their production—and all under management who have spent their lifetime in the Gear Business.

You furnish the specifications *we'll produce the gears!*



PERKINS MAKES:
to customers' specifications, in all materials, metallic and non-metallic: bevel gears, ratchets, sprockets, ground thread worms, spiral gears, helical gears, spur gears with shaved or ground teeth.

NOTE: The PERKINS PRECISION SPRING COILER is the latest development in the spring coiler field and eliminates entirely the use of arbors and long set-up time. It is a complete self-sufficient machine and enables you to make the spring you want when you want it — in seconds. The coiler produces any type of spring, in any diameter and any pitch with this range: Wire sizes .005 to .125. Diameter, from 3/32" to 12" and larger. Size of the compact coiler is only 7 1/2x16". A POWER MODEL is available. Information on request.

PERKINS MACHINE & GEAR CO.

107 Circuit Ave., WEST SPRINGFIELD, MASSACHUSETTS

For More Information Circle No. 347 on Inquiry Card—Page 17

industry

Kelsey-Hayes Wheel Co., Detroit, has added 100,000 sq. ft. to its aircraft parts plant in Jackson, Mich.

The world's largest drop-bottom, metal treating furnace of its type is now in operation at **Metallurgical, Inc., Minneapolis.** It hardens, anneals, stress relieves and normalizes steel and aluminum.

A $5,000,000 factory, to house what will be the world's largest screw and bolt plant, is being built by **National Lock Co., Rockford, Ill.** It is scheduled for completion by the fall of 1957.

United Pipe Column & Railing Co., Norristown, Pa., has been acquired by **Solar Steel Corp., Cleveland.** United will operate as a division of Solar.

Calaveras Cement Co., San Francisco, has advanced, by several months, the completion date of its $4,000,000 plant expansion program — originally scheduled for the end of 1956. Major item in the expansion program is a 360-foot rotary kiln, which will raise Calaveras' production capacity by 30%.

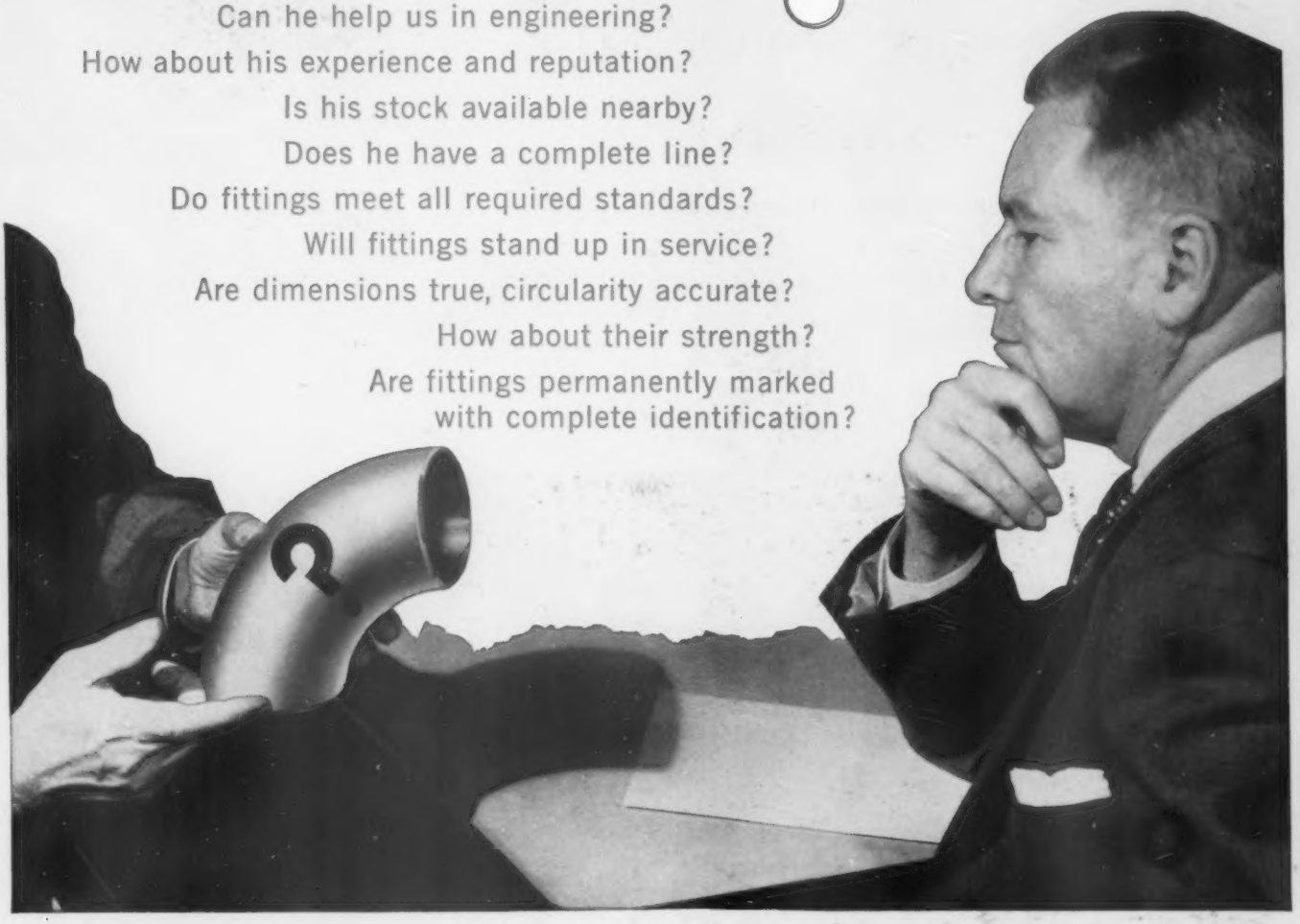
Western Paper Box Co., Detroit, has been purchased by **Stone Container Corp., Chicago.** Western Paper will continue under its present name as a subsidiary of Stone.

Continental Can Co., New York, is building a completely modern plant in Cincinnati, which will double its present can manufacturing facilities there. New products to be manufactured include metal containers for beer, shortening, and liquid detergents. The plant will also produce cans for motor oils, vegetables, fruits and other foods.

For More Information Circle No. 348 on Inquiry Card—Page 17→

why run a risk with Question-Mark fittings

Is the manufacturer a piping specialist?
Can he help us in engineering?
How about his experience and reputation?
Is his stock available nearby?
Does he have a complete line?
Do fittings meet all required standards?
Will fittings stand up in service?
Are dimensions true, circularity accurate?
How about their strength?
Are fittings permanently marked with complete identification?



No unanswered question...no risk
when you buy known fittings

YOU SAVE purchasing time and avoid trouble later on when you buy TUBE-TURN* Welding Fittings and Flanges. Made in U.S.A. by the leader in the field, these products give you top quality and uniformity, backed by unmatched engineering service and nearby complete-line distributor facilities.

They meet *all* American Standard and Safety Code requirements. Each product is permanently identified by the "TUBE-TURN" trademark with complete size and material designation. You can't get a better bargain in welding fittings and flanges than from your trusted Tube Turns' Distributor!

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POSITIVE IDENTIFICATION



THE WELDER KNOWS he's getting the exact fitting specified on the blueprint because the fitting is clearly marked with all designations.

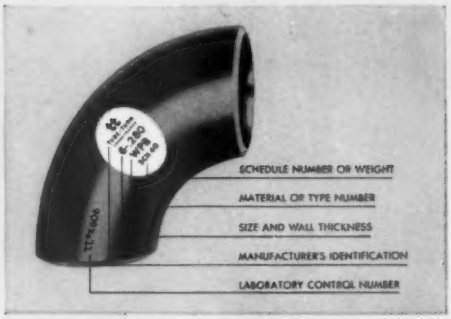
Complete...Permanent Identification!



THE STOREROOM WORKER KNOWS he is selecting the right fitting when it's marked "TUBE-TURN". The fitting bears complete information called for on the requisition.



THE DESIGNER KNOWS that his specifications will be carried out precisely where his drawings call for "TUBE-TURN products". At every stage . . . from purchasing to pipe installation, people KNOW what they're getting and using.



CLEARLY MARKED. TUBE-TURN* Welding Fittings are completely identified as to dimensional and metallurgical facts. Here is your assurance that you have the RIGHT fitting, and that it has passed Tube Turns' rigid inspection and quality control.

This is just *one* reason why you should specify the leading brand of fittings and buy from your trusted Tube Turns' Distributor.

TUBE-TURN Welding Fittings and Flanges are made in U.S.A.
They meet *all* U.S. piping code specifications.

TUBE TURNS

LOUISVILLE 1, KENTUCKY

A Division of National Cylinder Gas Company

DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Cleveland • Detroit • Chicago • Kansas City • Denver
Los Angeles • San Francisco • Seattle • Atlanta • Tulsa • Houston • Dallas • Midland, Texas

tt
TUBE-TURN

*"TUBE-TURN" and "tt" Reg. U.S. Pat. Off.

JOB WANTED

Experienced Assembly Engineer. Successful record of effecting substantial assembly savings in 7 out of 10 cases. Will check your fastening problems and make specific recommendations for reducing assembly costs. Trained to fit the right screw to the right job. Works best when product is in design stage. Can also replace slow, costly assembly techniques with the fast, effective P-K® method without disturbing production routine. For complete details, call your local Parker-Kalon distributor. No cost or obligation.



this specialist wants to work for you!

Call in a P-K Assembly Engineer and find out how you can profit through reduced assembly costs the P-K way. Take advantage of this unique Parker-Kalon service—another of the many reasons why users say—"if it's P-K . . . it's O. K."

PARKER-KALON DIVISION, GENERAL AMERICAN TRANSPORTATION CORPORATION—CLIFTON, NEW JERSEY

PARKER-KALON® *fasteners*

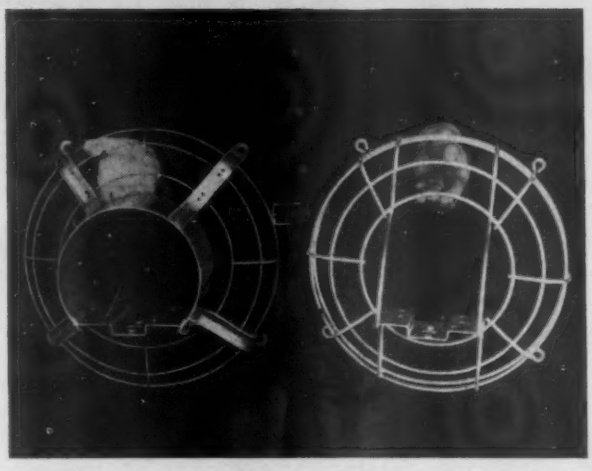
Sold Everywhere Through Leading Industrial Distributors. Warehouse in Chicago, Illinois

For More Information Circle No. 349 on Inquiry Card—Page 17

Most costs can be reduced!

Come to Titchener!





$1.00 PER UNIT SAVED: This motor mount was originally comprised of two separate parts—sheet steel and wire guard. To simplify assembly and reduce unit cost, the manufacturer came to Titchener. Result: the new Titchener-manufactured motor mount, right, is a single welded-wire assembly. Strip steel is eliminated, and only one assembly step is necessary.

Take advantage of Titchener ideas

Costly products and parts for all types of industry are constantly being replaced by Titchener simplified components . . . with equal or improved reliability of performance . . . *at significant cost reductions.*

We welcome the opportunity to discuss your problems with you personally.

Visit us . . . inspect our cost-cutting facilities for volume production at first hand. Our business is to help you make your product more competitive in price and performance. If you find it impossible to come to Titchener personally, write us about your problem. Send prints or samples. You'll receive a complete cost analysis plus cost-cutting suggestions. Production quotations included. A full size sample can be made at your request. Your information remains confidential.

A few of the many firms which have recently benefitted from a trip to Titchener:

- Surface Combustion Corporation
- I.B.M. Corporation
- Daystrom Furniture Company
- General Electric Company

WIRE GOODS Headquarters



E. H. Titchener & Co.
92 Clinton St., Binghamton, N. Y.

FREE . . . new booklet; "How Wire Construction Reduces Costs"

A brand new study, "Before" and "After" illustrations of 36 products, with specific details on how Titchener suggestions enable manufacturers to cut costs and improve their product. Just mail the coupon.

E. H. Titchener & Co.
92 Clinton St., Binghamton, N. Y.
Please forward my copy of the free "HOW" booklet showing how wire redesign by Titchener cuts costs.

Name_____

Company_____

Address_____

City_____

industry

Square D Co., Detroit, has allocated $9,000,000 for new plants and other capital improvements to be completed during the next 22 months.

Completion of the final unit in a $16,000,000 plant expansion program has been announced by **Dow Corning Corp., Midland,**



Mich. The new facilities which more than double Dow's production of methyl siloxane, have resulted in a 7½% reduction in price of dimethyl silicone fluids and emulsions.

The Sheffield Corp., Dayton, has purchased Erwin A. Slate, Inc., Gasport, N. Y.

Construction of a new $100,000 building to house the Kenco Pump Division has been announced by **American Crucible Products Co., Lorain, O.** It will provide more than 17,000 sq. ft. of space for the manufacture of the Kenco line of sump, bilge, and circulating pumps.

Kaiser Aluminum & Chemical Corp., Oakland, Calif., is entering the aluminum food container business with two plants, one on the west coast and the other in the mid-west. The west coast plant is being acquired through the purchase of Foil Kraft, Inc., Los Angeles. The mid-west aluminum container plant will be a new facility, costing more than $1,000,000. It will be located at Wanatah, Ind.

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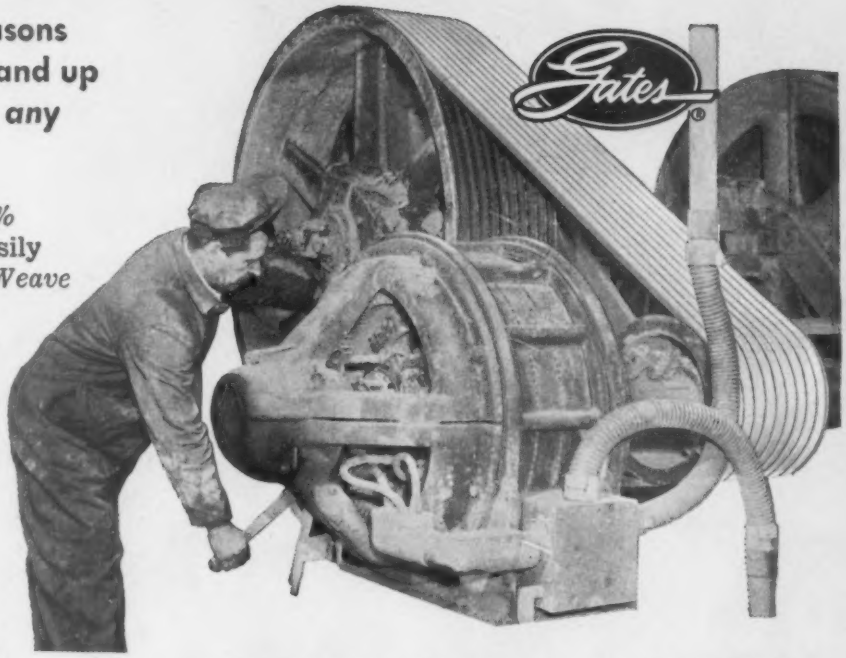
Withstands far greater SHOCK LOADS than any standard V-belt

Here are the interesting reasons why Gates Super Vulco Ropes stand up months, even years longer than *any* standard V-belts...

1. *Super-Strength Cords* provide 40% greater horsepower capacity . . . easily absorb heavy shock loads. **2.** *Flex-Weave Cover* (U.S. Pat. No. 2519590) provides greater flexibility with far less stress on the fabric. Cover wears longer — increases belt life, lowers belt costs.

3. *Concave Sidewalls* (U.S. Pat. No. 1813698) provides sure pulling power, longer wear because sides straighten out as belt bends— make even contact with sheave walls.





SHOCK LOAD of this big jaw crusher at Canadian Quarries, Ltd. is absorbed by Gates Super Vulco Rope Drive. Wherever shock load is severe, Gates Super Vulco Ropes cushion the shock—keep machinery replacement cost down.

3 other outstanding advantages

Resists Oil, Heat and Weather: Long life is assured even in the presence of excessive oil . . . even under prolonged exposure to heat and weather.

Provides Static Safety: The high electrical conductivity of Gates Super Vulco Rope provides safer drives in explosive atmosphere.

Saves Space: Higher horsepower rating and greater resiliency may permit fewer belts, or smaller sheaves where space saving is vitally important.

The Gates Rubber Co., Denver, Colorado
World's Largest Maker of V-Belts

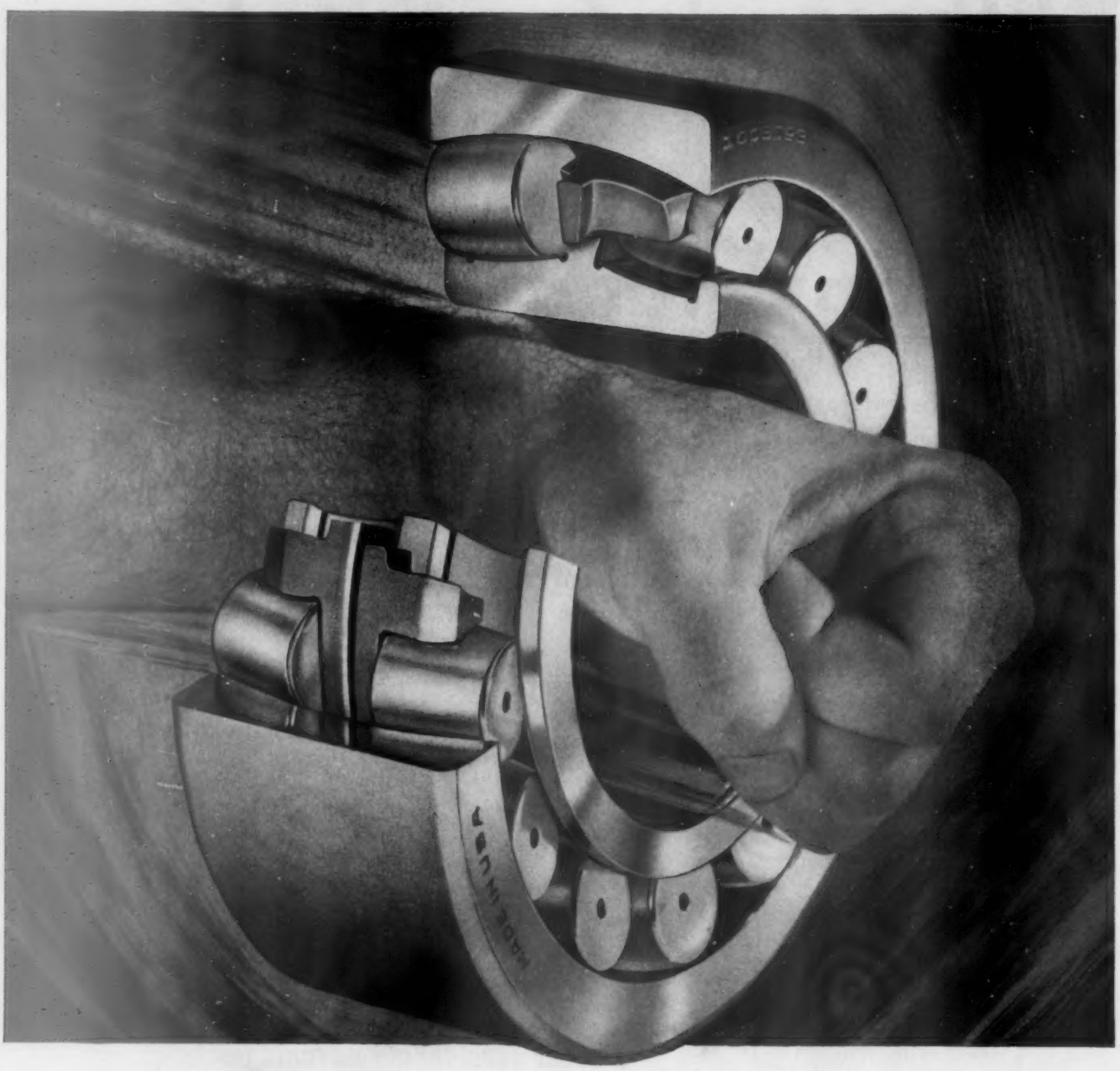
Gates SUPER Vulco Rope

The V-Belt with 40% more horsepower capacity

"PA 8"

For More Information Circle No. 351 on Inquiry Card—Page 17

TORRINGTON *SPHERICAL ROLLER* BEARINGS



This bearing can take thrust, too!

Design is the secret. TORRINGTON Spherical Roller Bearings are made with an integral center flange on the inner race. This assures *positive radial stability and accurate positioning of rollers* wherever high radial load and heavy thrust are encountered under conditions of misalignment.

From crushers to cranes, power shovels to pulverizers, you get long, maintenance-free operation, better performance in your equipment, more value from your bearing dollar when you specify these rugged dependable bearings.

Prove to yourself that TORRINGTON design does make a difference. Next time specify TORRINGTON Spherical Roller Bearings. They're available with either straight or tapered bore, for shaft or adapter mounting.

THE TORRINGTON COMPANY

South Bend 21, Ind. • Torrington, Conn.

District offices and distributors in principal cities of United States and Canada

90th ANNIVERSARY 1868–1958

TORRINGTON BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller
Needle • Ball • Needle Rollers

For More Information Circle No. 352 on Inquiry Card—Page 17

• Soap solution • Calcium hypochlorite •

• Water containing abrasive particles • Carbon slurry • Ferric hydroxide •

Soap solution containing sand and ground glass • 25% grape juice concentrate •

• 50% caustic soda • Ferric sulphate • Ammonium sulphate • Demineralized water

Trisodium phosphate • Reactivated carbon • 1% chlorine solution • Sulphuric acid •

• 10% chromic acid • Humic acid • • Weak black liquor •

Waste sulphite liquor • Bleach liquor • • Slurries

Acid mine water • Liquid latex •

• Alkylaryl sulfonate •

• Sodium hydroxide •

• Calcium hydroxide •

• Calcium bisulphite •

Calcium hypochlorite •

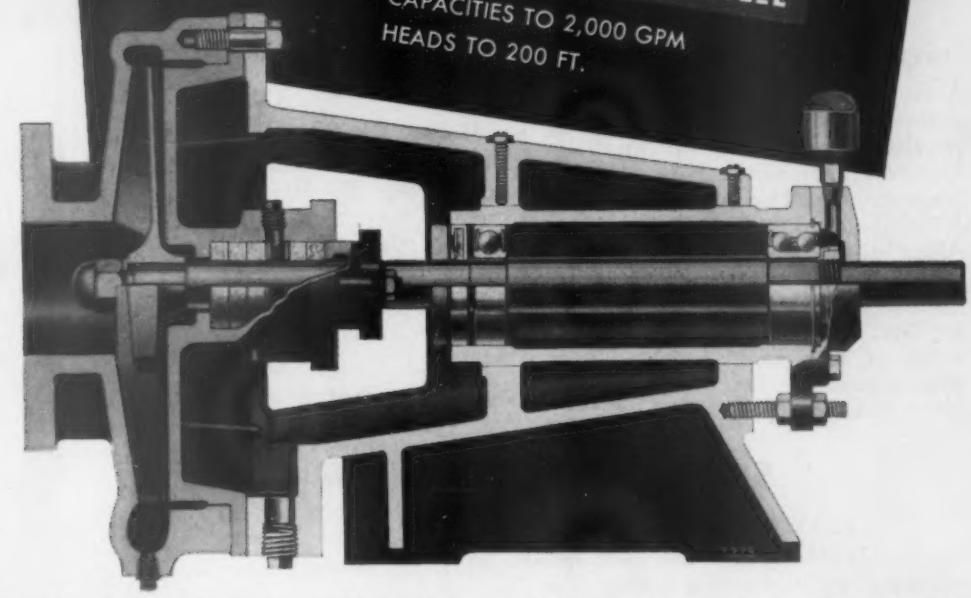
• Demineralized water

One pump handles all these problem liquids

DE LAVAL CPO PROCESS PUMP

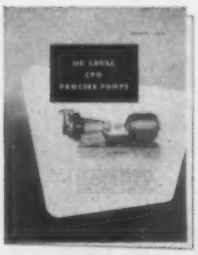
WITH KK-20 STAINLESS STEEL

CAPACITIES TO 2,000 GPM
HEADS TO 200 FT.



The De Laval CPO Process Pump has stainless steel parts where it comes in contact with the liquid. The casing, end head, stuffing box, impeller, seal ring and gland are all of De Laval KK-20 (20-28 stainless with molybdenum and copper). The shaft and lock nut are made of other suitable stainless steels. • Three bearing pedestals accommodate nine wet end sizes. Off-the-shelf parts in ferrous and nonferrous combinations permit changing size or metallurgy after installation. CPO pumps are available with both conventional packing and mechanical seals.

WRITE FOR BULLETIN 1125-B

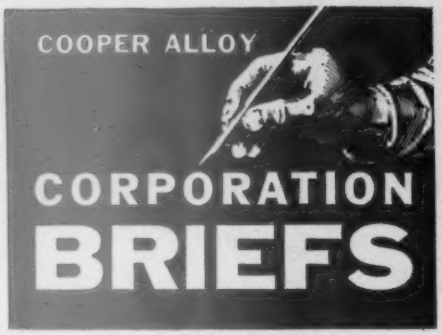


DE LAVAL *Centrifugal Pumps*

DE LAVAL STEAM TURBINE COMPANY

807 Nottingham Way, Trenton 2, New Jersey

DL-331



• Edited by GEORGE BLACK

VALVE CLINICS

In spite of our belief that the Cooper Alloy stainless steel valve offers the best in design and operating features, we take it to school regularly. This "school" consists of continual study by field engineers, design engineers and by industry itself subjecting it to intensive examination and reporting their findings at organized Valve Clinics.

Cooper Alloy Valve Clinics have been held in dozens of leading plants, including Dow, DuPont, Mathieson, Celanese, Pfizer and many others. Arrangements for such a clinic in your own plant may be made through our Public Relations Division.

"FLEX-ALLOY" STAINLESS PUMP

A new line of stainless steel rotory pumps for corrosive solutions, abrasive slurries and fluids which must be kept free from contamination has just been announced by our Vanton Pump & Equipment Division. Called "Flex-Alloy" these new pumps in type 304 or 316 stainless (other alloys on request) incorporate the same no-stuffing box, no-shaft seals, no-gasket features of the popular "flex-i-liner" plastic pump series. Full details are given in Bulletin VP561.

FAST AND COLD

On October 14, 1947, the Bell X-1 made history by flashing through the skies faster than sound. Cooper Alloy is proud to have been teamed with the Glasby Company in helping Bell Aircraft carve its notch in history by furnishing the 30" diameter, 3" wall stainless steel sphere required for handling the liquid nitrogen.

COOPER ALLOY
CORPORATION • HILLSIDE, N. J.

For More Information Circle No. 353 on Inquiry Card—Page 17

industry

Pines Engineering Co., Inc., Aurora, Ill., has purchased all the assets and patent rights of **Roto-Mation Motors, Inc., St. Clair, Mich.,** and formed a new corporation in Greenville, O., known as Roto-Mation, Inc. The new corporation will manufacture a hydraulic-pneumatic oscillating torque motor. Roto-Mation, Inc., will operate as a separate subsidiary of Pines Engineering.



Precise Products Corp., Racine, Wis., has moved into its new plant building. The new facilities permit doubling Precise's production of power tools.

Morse Chain Co., Detroit, a Borg-Warner subsidiary, has acquired the Eberhart-Denver Co., Denver, and its affiliate, the Spreco Co., Chicago.

Peerless Electric Co., Warren, O., has opened its new $350,000 Fan and Blower Division plant. The plant increases manufacturing space by 50% and provides the possibility of increasing the Peerless line from 250 models of fans and blowers, to about 400.

H. I. Thompson Fiber Glass Co., Los Angeles, has completed a new plant for its Reinforced Plastics Division in Inglewood, Calif. The new plant triples the production capacity of the division.

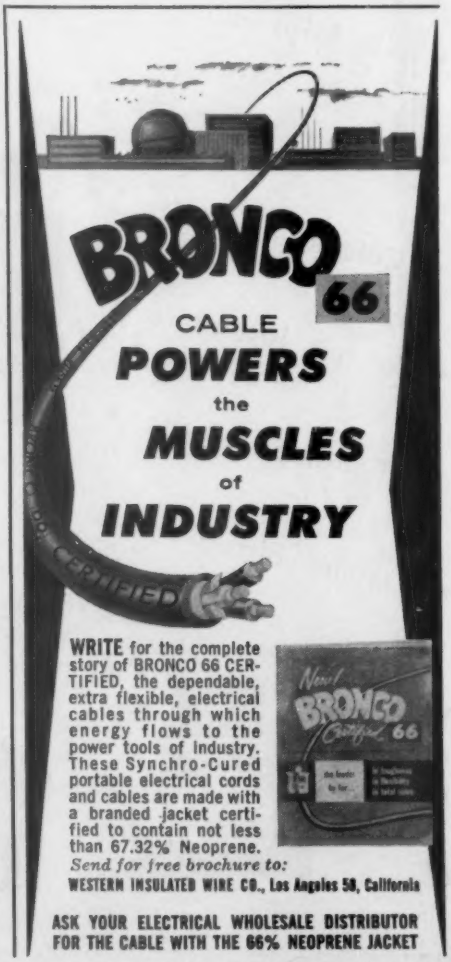
The establishment of new departments for wax investment casting and shell molding operations has been announced by **Alloy Precision Castings Co., Cleveland.** Alloy is a subsidiary of Mercast Corp., New York.

Valley Mfg. Co., Valley, Neb., is now producing lightweight steel pipe in six and eight inch diameters. The product is butt welded and manufactured in 20, 30 and 40 foot lengths. Production facilities to produce 10 inch diameters will be installed later this year.

Approximately 100,000 sq. ft. of manufacturing space has been added to the facilities of **Fenwal, Inc., Ashland, Mass.,** manufacturer of temperature controls and fire detectors for industrial and aviation use.

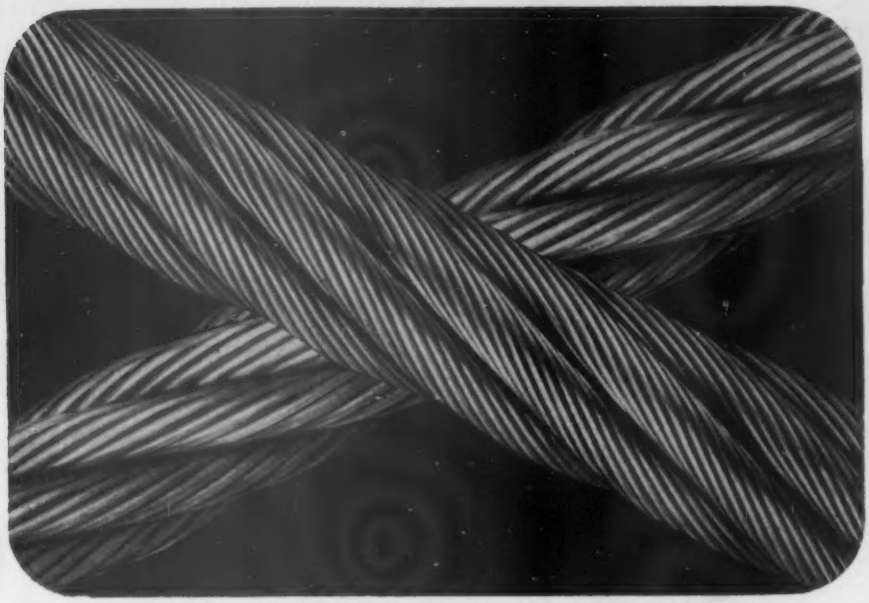
Koppers Co., Inc., Pittsburgh, is investing approximately $25,000,000 during 1956 to continue its five-year expansion program begun in 1955.

Baldwin-Lima-Hamilton Corp., Philadelphia, is building a new manufacturing plant at Waltham, Mass., for its newly organized Electronics and Instruments Division. The plant will be completed by September 1st, and will have 102,000 sq. ft. of floor space.



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FIRST WE DEVELOPED 1105 ROPE WIRE.



THEN WE MADE ROEBLING'S

Royal Blue

WIRE 1105 ROPE

1105 takes Royal Blue out of the ordinary wire rope class.

1105 is a rope wire that's new—that's stronger. It's the biggest news in many years.

1105 is the result of more than a century of research and development—it's the wire that gives Roebling Royal Blue the stamina that pays off in service.

Contact your Roebling distributor or write us for the full story.

ROEBLING

Subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6, N. Y.

For More Information Circle No. 355 on Inquiry Card—Page 17



you needn't be big to get attention at CRUCIBLE

Even baby-sized orders get special attention at Crucible . . . *because they're important to us.* The fact is, most of our warehouse business is devoted to serving the small steel user efficiently and economically.

That's why, when you need quality special steels in *any* quantity — or just some help with an application, you can be sure of a real welcome at Crucible. *We're big enough to serve you . . . small enough to want to.*

Stocks maintained of:

Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits, and Hollow Tool Steel Bars) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . Max-el, HY-Tuf, AISI Alloy . . . Onyx Spring, Hollow Drill Steel and other special purpose steels.

CRUCIBLE WAREHOUSE SERVICE

Crucible Steel Company of America

General Sales Offices, Oliver Building, Pittsburgh, Pa. Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago Cincinnati • Cleveland • Dayton • Denver • Detroit • Houston • Indianapolis • Los Angeles • Milwaukee • Newark • New Haven • New York • Philadelphia Pittsburgh • Providence • Rockford • San Francisco • Seattle • Springfield, Mass. • St. Louis • St. Paul • Syracuse • Toronto, Ont.

For More Information Circle No. 356 on Inquiry Card—Page 17

"INCREASED TAP LIFE FROM 250 TO 4000 PIECES"



Cities Service Chillo Cutting Oil produces astounding results for C.S.S. Machine & Tool Company, Philadelphia, Pa.

Metal stamping . . . precision grinding . . . machining . . . stud welding . . . tool and die making. These are some of the expert operations performed by the 120 skilled employees of C.S.S. Machine & Tool Company of Philadelphia . . . operations based on many years' knowhow and teamwork. And for the past year, with Cities Service cutting fluids, this work has been done with even greater precision, greater efficiency than ever before.

In its tapping operation, for example, C.S.S. increased tap life from an average 250 pieces to over 4000 pieces with Cities Service Chillo Cutting Oil. And in a drilling operation with its Brown and Sharpe Automatics, time required to make one piece was cut from 240 to 165 seconds!

Says President F. G. Schutz: "Cities Service Chillo Cutting Oils are the best we've ever seen. Likewise, Cities Service Lubrication Engineers. It's wonderful to deal with someone who knows our operation so well and has products that help improve it."

If you have a lubrication problem, or even if you're running smoothly, talk with a Cities Service Lubrication Engineer. He's known for solving problems, known for making smooth operations still smoother. Or, if you prefer, write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

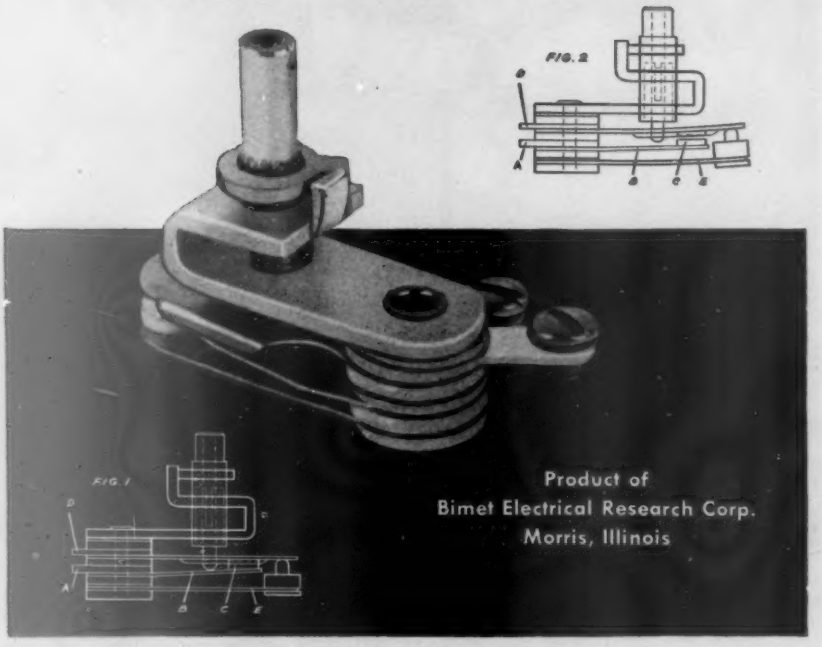
CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

For More Information Circle No. 357 on Inquiry Card—Page 17

How Chace Thermostatic Bimetal actuates the

Belcor Thermostat



Belcor Thermostats are precision-made, custom-built at costs comparable with stock thermostats. Features of these thermostats include: elimination of false cycling and "chatter" of contact points by virtue of passing current through the independent contact springs rather than the bimetal member; although pre-calibrated, a trim screw inside the adjusting shaft simplifies re-adjustment or re-calibration; single stud mounting gives fast transfer of heat and a single through-hole facilitates assembly.

Operating temperatures available up to 600 degrees F. UL approved, these thermostats include open and fully closed types. Contact ratings afford a variance to a maximum of 1500 watts at 120-240 V. AC.

How it works: In the normally closed circuit position (Fig. 1), current passes from terminal (A) through stainless steel spring (B) and silver contacts (C) back to terminal (D). Ambient temperatures in excess of the factory calibrated rating cause the Chace Thermostatic Bimetal strip (E) to deflect (Fig. 2), opening the circuit at contacts (C) until temperature is again normalized.

Chace Thermostatic Bimetal is available in 29 types, in strip, coil or in complete elements made to customer specification. Write now for our free 36-page booklet, "Successful Applications of Chace Thermostatic Bimetal."

IT BENDS WITH THE HEAT

W. M. CHACE CO.
Thermostatic Bimetal
1635 BEARD AVE., DETROIT 9, MICH.

For More Information Circle No. 358 on Inquiry Card—Page 17

industry

Rockwell Mfg. Co., Pittsburgh, has acquired the assets of Locomotive Finished Materials Co., Atchison, Kan. It will operate as a major division of Rockwell.

The installation of new equipment for the manufacture of large hypoid, zerol and spiral bevel gears has been announced by **Illinois Gear & Machine Co., Chicago.** The equipment will handle



gears up to 6′ in diameter, 10″ face, .75 diameter pitch (4.188″ C.P.) and 2-7/8″ tooth depth. Hypoid gear sets with 10″ offset of the pinion can also be produced.

Square D Co., Detroit, and **Electric Controller and Mfg. Co., Cleveland,** have merged. Square D, as the surviving company, operated Electric Controller as a separate division.

A $16,000,000 expansion program for 1956 has been announced by Air Reduction Sales Co., a division of **Air Reduction Co., Inc., New York.** Three new producing plants are scheduled for completion this year; at Chicago, Ill.; Alton, Ill.; and Calvert City, Ky. Additional producing facilities will also be installed at Butler, Pa., and output will be increased at Riverton, N. J. These two plants are the largest Airco plants for producing liquid and gaseous oxygen, nitrogen, argon, and the rare gases such as neon, krypton, and xenon.



A. Louis Oresman, President of Catalina, Inc., asks

"Can you pick the winner?"

"The bathing suit business is like a beauty contest. You never can tell in advance which models are going to win!

"This year, for example, we designed more than 400 different suits. Those that catch on in the stores get a flood of rush orders! They push our production facilities to the utmost. And that, in turn, puts the pressure on shipping and delivery.

"But even though our manufacturing is done in the Los Angeles area, we never have delivery problems anywhere in the 48 states! They're all solved for us by Air Express! And Air Express has never failed us!

"Using Air Express regularly, we can fill rush orders anywhere in the country in a matter of hours. And in the highly competitive fashion business, that's important!

"And yet, most of our shipments cost less than any other air service. 10 lbs., for instance, Los Angeles to Dallas, is $5.70. It's the lowest-priced complete air service by 81¢!"

Air Express

GETS THERE FIRST *via U.S. Scheduled Airlines*

CALL AIR EXPRESS . . . *division of* RAILWAY EXPRESS AGENCY

For More Information Circle No. 359 on Inquiry Card—Page 17



for consistent quality and individual service

CHAIN PRODUCTS

- Wide range of high quality standard chain.
- In standard or special metals and finishes.
- Also custom-made, cut to length, fitted with hooks, etc., to your specifications.
- Prompt attention to inquiries—Quick deliveries from factory stock.

RUSSELLLINE

THE RISDON MANUFACTURING CO.

JOHN M. RUSSELL DIVISION —Est. 1904
Naugatuck, Conn.

RI-69

Write For New, Free, 16-page, illustrated catalog.

For More Information Circle No. 360 on Inquiry Card—Page 17

industry

Kaiser Aluminum & Chemical Corp., Oakland, Calif., is building an $8,000,000 caustic-chlorine plant adjacent to the company's alumina plant to built at Gramercy, La. Both facilities will total $60,000,000. The alumina plant will produce about 500,000 tons of alumina per year, and the caustic-chlorine plant will have a capacity of more than 40,000 tons of caustic soda and 36,000 tons of chlorine per year.

A new plant that will increase production by 40% has been built by **General Welding Co., Bethlehem, Pa.**

T. R. Almond Mfg. Co., Willoughby, O., has changed its name to **Kennametal Co. of Ohio.** Almond was acquired seevral months ago by Kennametal Inc., Latrobe, Pa., and is being operated as a wholly-owned subsidiary.

Kaiser Aluminum & Chemical Corp., Oakland, Calif., has announced a new $280,000,000 expansion program that will bring the company's total primary aluminum capacity up to 654,000 tons per year. Major projects under the new program will be the construction of a 220,000 ton aluminum reduction plant at Ravenswood, W. Va., and a 500,000 ton alumina plant on the Mississippi near Gramercy, La. Ground is scheduled to be broken for these facilities next month.

Puget Sound Sheet Metal Works, Seattle, Wash., has changed its name to Puget Sound Fabricators, Inc.

Cannon Electric Co., Los Angeles manufacturer of multi-contact electric connectors and dc solenoids, has acquired the **Diamond Mfg. Co., Wakefield, Mass.**

★ ★ ★ FLASH

SPEEDI-DRI SPOTLIGHT

★ ★ ★ FLASH

A REPORT TO MANAGEMENT ON INDUSTRIAL MAINTENANCE

VOL. II APRIL 1956 No. 2

Sol-Speedi-Dri Now Flecked with Green

OUT OUR WAY BY J. R. WILLIAMS



FIVE FACTORS THAT CONTROL FINAL ABSORBENT COSTS

Price is an important factor in your choice of a mineral floor absorbent—but, obviously, not the *only* consideration. Here are some other things to weigh before making your selection:

ABSORPTION
Does the material thoroughly absorb and retain oil and grease deposits—keep floors slipproof under foot? If not, it means more frequent application, requiring more material and manpower. And what price do you put on a crippling injury caused by a slip or fall?

VOLUME WEIGHT
The more volume you get per pound of absorbent, the more coverage you get (a pound of feathers spreads farther than a pound of sand)—and the more economical it is for you to use.

UNIFORMITY
Do you get uniform volume weight and efficiency—bag after bag, all year long? You're paying a uniform price.

ABRASIVENESS
Is the material gritty and abrasive to the extent it could damage working parts of machinery?

DUST
Does the absorbent create dust when applied or when subjected to heavy traffic. A dusty absorbent causes serious maintenance problems—affects efficiency and morale of workers.

Judge Sol-Speedi-Dri by these factors—and you can't logically use any other mineral absorbent!

Top-Selling Oil and Grease Absorbent Has New "Trademarking," New Performance Qualities

Beginning with shipments from our plant in mid-April, industrial maintenance men can be sure they're getting the "finest of oil and grease absorbents" for their plant floors. For Sol-Speedi-Dri—long the answer to that description—now has a *new look*. Scattered through each bagful are granules of pure Sol-Speedi-Dri *colored green* by a new process. These green flecks have been developed for your protection. They're a trademark that clearly identifies *double S-d* quality—and none other!



VASTLY IMPROVED PRODUCT
Green-flecked Sol-Speedi-Dri is new in more ways than one. Speedi-Dri Corporation's research laboratories have made dramatic improvements in basic *double S-d* properties — improvements that mean easier application and removal, more efficient performance, and greater dollars-and-cents economy.

VOLUME WEIGHT, COVERAGE
The amount of absorbent needed to cover your floors is in direct ratio to the amount of labor required to spread the material—and the amount of your annual maintenance bill. The new, improved Sol-Speedi-Dri is uniformly lighter in volume weight—spreads farther, requires less manpower, trims your costs.

ABSORPTION, RETENTION
Sol-Speedi-Dri's harder, thirstier, more dustfree granules absorb and retain oils and greases more efficiently than ever—leave floors clean, dry, safe under foot.

NEW LOOK FOR BAG
Green-flecked *double S-d* is new outwardly, too. Its bag has a brand-new design (see sample version below)—and features two sturdy kraft paper walls, plus a 90-lb. asphalt liner with siftproof seams.

NEW VALUE FOR YOU
For real efficiency and economy in floor maintenance, get green-flecked Sol-Speedi-Dri—your guarantee of dependable quality!

SEND FOR YOUR FREE SAMPLE

SPEEDI-DRI CORPORATION
(A subsidiary of Minerals & Chemicals Corp. of America)
86 Essex Turnpike, Menlo Park, New Jersey

☐ Send me a free sample of the new improved Sol-Speedi-Dri



Name_____

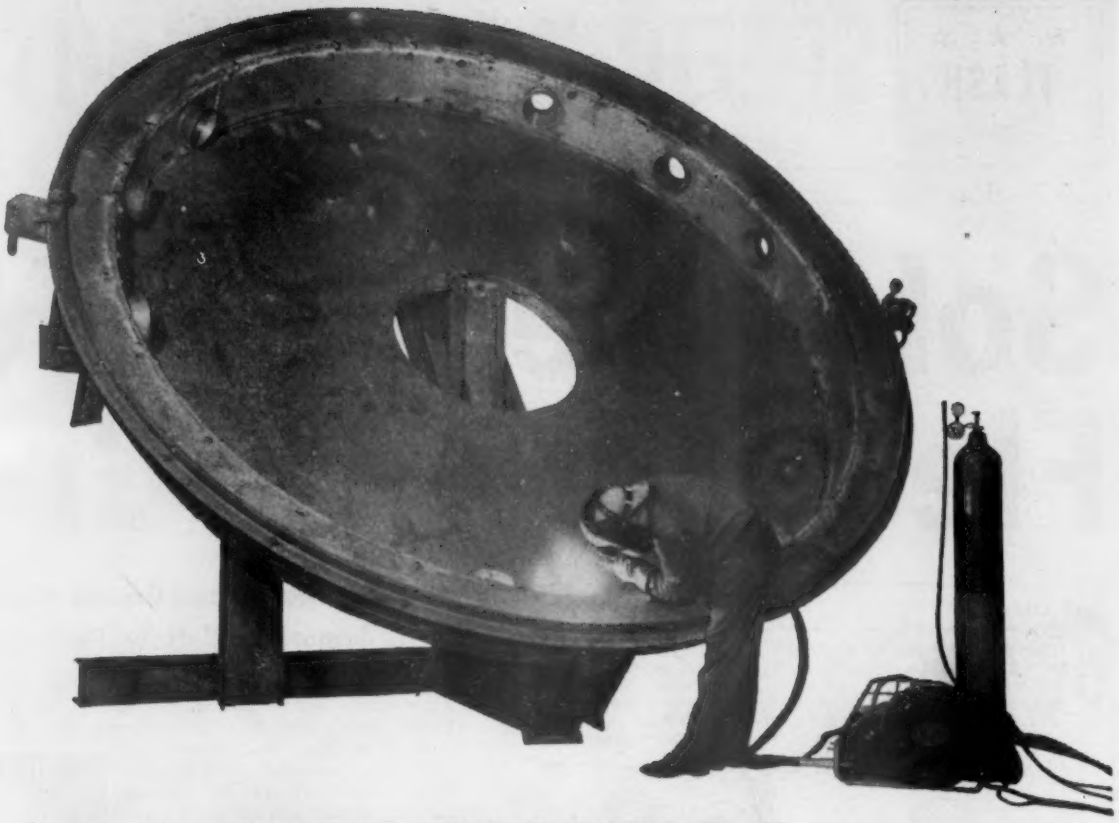
Company_____

Address_____

City_____ State_____

DISTRIBUTED IN CANADA BY G. H. WOOD & COMPANY, LTD., TORONTO

For More Information Circle No. 361 on Inquiry Card—Page 17



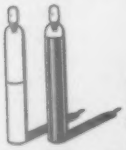
a complete **AIRCOMATIC** "package" . . . from recommendation to results



Aircomatic welding is an inert-gas, shielded arc process using a a consumable wire electrode. The basic unit, manual or automatic, designed and manufactured by Airco, includes the welding head, carriage assembly for wire drive and control equipment, cables, hoses, and flexible wire casing.



The consumable wire electrode is produced to rigid Airco specifications as to purity, cast, and metallurgical content. Normally supplied on expendable spools, Aircomatic wire is available in aluminum, steel, stainless steel, nickel, titanium, copper, and copper base alloys.



Airco shielding gases include both helium and argon, produced by Airco, or mixtures thereof for particular requirements. Pure carbon dioxide gas is also available from Airco for use as a shielding medium where applicable.



Aircomatic is a direct-current welding process. A complete line of Airco motor-generator and rectifier type welders are designed for Aircomatic characteristics – the latest of which is a new constant potential 800 amp ACV welder.

The Aircomatic process was invented, designed, developed, and licensed by Airco. Airco's eight years of experience have given the metal working industry an inert-gas process that welds all kinds of metals – adding speed, economy and versatility to every suitable application.

An Airco Representative can give you a completely unbiased opinion as to how Aircomatic can best be employed—because—Airco is a leading manufacturer-supplier of all types of oxyacetylene, metallic arc and inert-gas shielded welding and flame cutting processes, their controls, supplies, and accessories.

Other Airco inert-gas welding processes include Aircospot and Heliwelding. Write today for details.

AT THE FRONTIERS OF welding PROGRESS YOU'LL FIND . . .

AIR REDUCTION PRODUCT

AIRCO®

Offices and dealers in most principal cities

AIR REDUCTION SALES COMPANY

A division of Air Reduction Company, Incorporated, New York 17, N. Y.

On the west coast — Air Reduction Pacific Company

Internationally — Airco Company International

In Cuba — Cuban Air Products Corporation

In Canada — Air Reduction Canada Limited

Products of the divisions of Air Reduction Company, Incorporated, include: **AIRCO** — industrial gases, welding and cutting equipment, and acetylenic chemicals • **PURECO** — carbon dioxide, liquid-solid ("DRY-ICE") • **OHIO** — medical gases and hospital equipment • **NATIONAL CARBIDE** — pipeline acetylene and calcium carbide • **COLTON** — polyvinyl acetates, alcohols, and other synthetic resins.

For More Information Circle No. 362 on Inquiry Card—Page 17

HOW TO PUT HALLOWELL SHOP DESKS TO WORK IN YOUR PLANT

BUY THESE STANDARD MODELS



MODEL 400

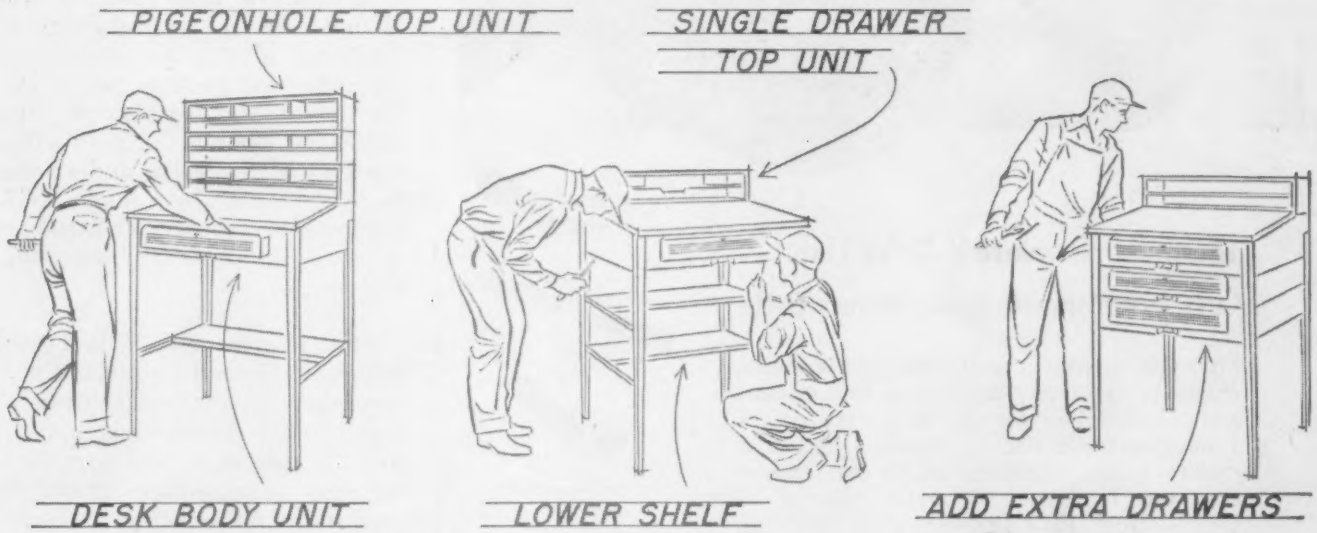


MODEL 406



MODEL 409

OR USE INTERCHANGEABLE PARTS TO CUSTOM BUILD THESE DESKS

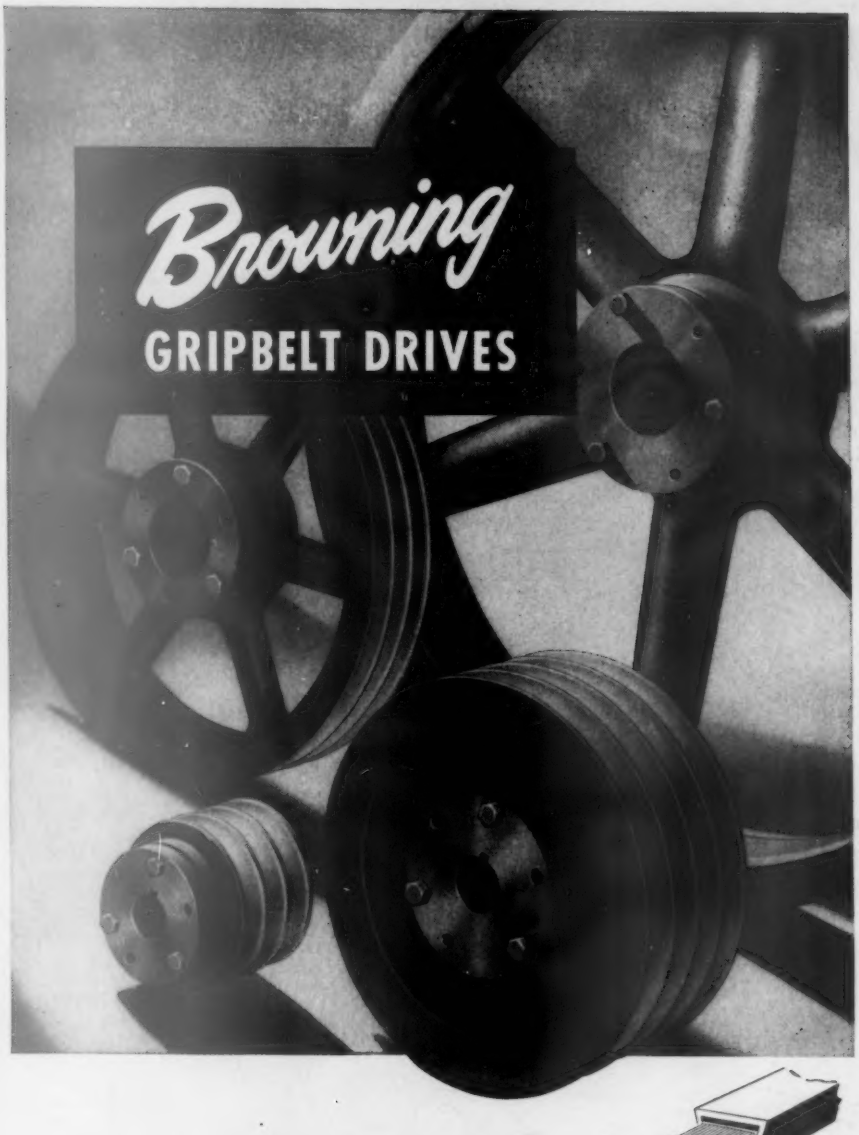


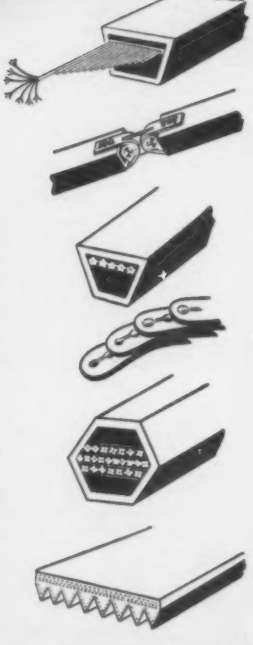
Sturdy steel for years of use · Large, smooth writing surface · Drawers that glide on roller bearings, have recessed drawer pulls · Built-in lock · Green baked-on enamel finish · Stocked by leading shop equipment dealers · Ask for Bulletin 728 · Hallowell Shop Equipment Division, Standard Pressed Steel Co., Jenkintown 31, Pa.

HALLOWELL SHOP EQUIPMENT DIVISION
STANDARD PRESSED STEEL CO.
SPS
JENKINTOWN PENNSYLVANIA

BENCHES (CABINET, WORK, UNIT) • STOOLS AND CHAIRS • SHOP DESKS • TOOL STANDS AND CABINETS • DRAWERS, DRAWER TIERS • STEEL CARTS • SHELVING

For More Information Circle No. 363 on Inquiry Card—Page 17





The most complete V-Drive Line . . .
Cuts maintenance time, lowers costs

From this one great integrated line your Browning distributor can supply the V-Drive most efficient and economical for any use. Browning produces a most extensive line of sheaves—single and multiple groove, variable pitch, die cast, pressed steel, cast iron. And the widest selection of V-belts—from FHP to steel cable, including versatile Griplink and Griproll, and new Poly-V. Incorporates same split taper compression bushing used in Browning couplings, paper pulleys, sprockets. Standardize your whole plant on one-type bushing, for distinct savings in assembly and maintenance. Get details from your Browning distributor. Or write us for free Catalog GC101.

Browning MANUFACTURING COMPANY
MAYSVILLE, KENTUCKY

For More Information Circle No. 364 on Inquiry Card—Page 17

industry

Metal & Thermit Corp., New York, is building a plant for mining and processing titanium-bearing ore near Montpelier, Va. It will produce both rutile and ilmenite.

Joy Mfg. Co., Pittsburgh, has opened a new facility at Buffalo, to be known as its Turbo-Dynamics Division. It will produce advanced compressors, turbines and other air and gas-handling devices.

Naugatuck Chemical division, United States Rubber Co., New York, has acquired land in the Scott's Bluff region of Baton Rouge, La., for the construction of a new chemical plant. It will be used for the manufacture of Kralastic plastic materials used for pipe, automotive parts, etc. The plant will cost more than $5,000,000, double the production capacity of Kralastic, and should be completed by July, 1957. Kralastic is a copolymer based on styrene, butadiene and acrylonitrile.

Atlas Powder Co., Wilmington, Del., has acquired **Aquaness Corp.** Aquaness is a manufacturer of petroleum dehydrating compounds, corrosion inhibitors, bactericides, and other chemicals used in the oil industry. Its Houston, Texas, plant is equipped with oxidation, oxyalkylation and esterification units, amine and amine salt reactors and blending equipment.

Columbia-Southern Chemical Corp., Pittsburgh, is expanding its research and development work at its Barberton, O., plant. The program will cost more than $1,000,000, and includes the construction of an ultra-modern research building.

For More Information Circle No. 365 on Inquiry Card—Page 17→

What Design Engineers Say About PHILLIPS CROSS RECESSED HEAD SCREWS



TITAN THERM-O-DIAL HEATER (Buffalo, N. Y.) is in a highly competitive market where appearance is important. Designer says,"We get a much tighter metal-to-metal bond, yet utilize a full mass-production assembly, which we could only do with Phillips screws."



"A BETTER LOOKING FIXTURE is obtained by the use of Phillips cross-recessed-head screws on our 8-Tone chime," says the chime engineer of Nutone Incorporated of Cincinnati, Ohio. "If screws must be used on the exterior of any unit, I definitely feel Phillips recessed-head screws are the very best choice."



PUSH-BUTTON STATION by Clark Controller Company, (Cleveland) must indeed be bright as a button and unmarred. Says design head, "We selected Phillips screws because they permit easy assembly with driver slippage reduced to a minimum."

MANUFACTURERS OF PHILLIPS CROSS-RECESSED-HEAD SCREWS

THE FASTENERS OF TODAY...
AND OF THE FUTURE
X marks the spot
the mark of extra quality

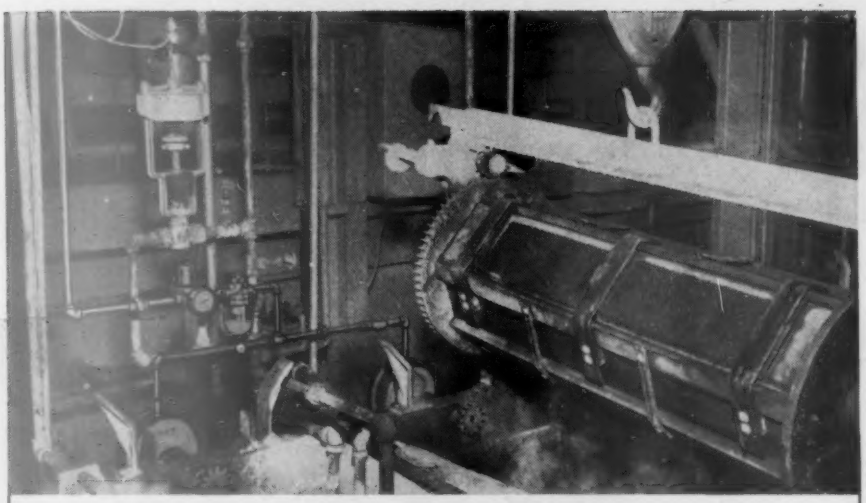
Pledged to highest standards...

The Phillips Screw manufacturers listed here cooperate to turn out a uniformly high standard of quality. As sponsors of the Phillips Cross-Recessed-Head Standards Committee they adhere to the established dimensional standards, gauges, and gauging methods which will best serve industry.



Members of Screw Research Association

American Screw Company • Atlantic Screw Works, Inc. • The Blake & Johnson Co. • Central Screw Company • Continental Screw Co. Elco Tool and Screw Corporation • Great Lakes Screw Corp. • The H. M. Harper Company • The Lamson & Sessions Company • National Lock Company • The National Screw & Manufacturing Company • Parker-Kalon Division, General American Transportation Corporation Pheoll Manufacturing Co. • Scovill Manufacturing Company • Shakeproof Division Illinois Tool Works • The Southington Hdwe. Mfg. Company • Sterling Bolt Company • Wales-Beech Corporation



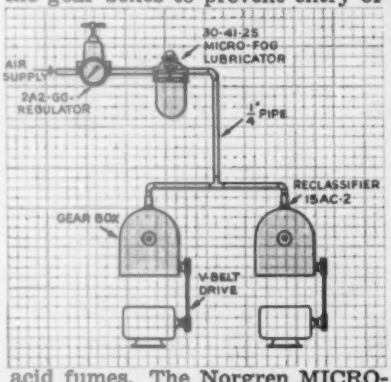
Costly Gear Repairs Ended By Norgren MICRO-FOG Lubrication

... Acid fumes "locked out" of gear boxes on plating tanks at Wagner Electric Corporation

The Problem: At the Wagner Electric Corporation, St. Louis, Missouri, baskets containing parts to be zinc plated in a hot acid solution are mechanically agitated by a gear drive.

With the former drip feed lubrication method, acid fumes entered the gear boxes, contaminating the lubricant and destroying the gear box seals. Loss of lubricant, hot-running gears plus corrosion by the contaminated lubricant greatly accelerated gear wear and resulted in frequent costly repairs.

The Solution: Three years ago, the Norgren MICRO-FOG Lubrication System shown in the picture above was installed to lubricate the gear drives on two plating tanks. The Norgren Pressure Regulator maintains a constant pressure in the gear boxes to prevent entry of

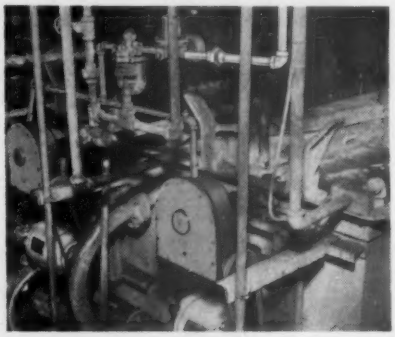


acid fumes. The Norgren MICRO-FOG Lubricator accurately meters oil flow and delivers a continuous fog of fresh, clean oil to the gears.

What Norgren Micro-Fog Is:

Norgren MICRO-FOG is an airborne suspension of extremely small oil particles (.00007874" or less in diameter). Because the oil particles are so small, they can be conveyed long distances through complex piping systems without reclassifying and flooding the lines with oil —a condition formerly not possible with conventional oil-fog systems.

The Results: Norgren MICRO-FOG automatically coats the gears with a continuous film of fresh oil, reducing gear wear and corrosion.



The gear box seal problem has been entirely eliminated because seals are no longer required. Much less lubricant does a more thorough lubrication job—with a substantial saving in lubricant cost. Maintenance costs have been radically reduced.

Without obligation, learn how Norgren MICRO-FOG Lubricators can provide more efficient lubrication and reduce costs in your plant. Call your nearby Norgren Representative listed in your telephone directory — or **Write the Factory for New No. 700 Catalog.**

C. A. Norgren Co.
3414 So. Elati St., Englewood, Colo.

Pioneer and Leader in Oil-Fog Lubrication Since 1930

For More Information Circle No. 366 on Inquiry Card—Page 17

industry

The Standard Screw Machine Co., Bellwood, Ill., has purchased the Ravenna Metal Products Corp., Seattle, Wash. Ravenna will operate as a subsidiary.



Full scale commercial production of impact extrusions for industry has been launched by **General Dry Batteries, Inc., Cleveland.** The plant can extrude parts from zinc, magnesium and aluminum.

Reynolds Metals Co., Richmond, and the **Ford Motor Co., Detroit,** have signed a contract for the largest industrial aluminum order in the history of the aluminum industry. Under the agreement, Reynolds will deliver to Ford, during the next 10 years, an amount of primary aluminum expected to be in excess of 640 million pounds. Most of the aluminum will be delivered in molten form direct from a new Reynolds reduction plant to a Ford foundry to be built adjacent to it. The plants will be in Listerhill, Ala.

A new manufacturing and warehousing facility has been opened in Los Angeles by **Cutler-Hammer, Inc., Milwaukee.**

Pyrene Mfg. Co., Newark, N. J., and its wholly-owned subsidiary, **C-O-Two Fire Equipment Co.,** have merged. A new name, Pyrene-C-O-Two Corp., has been adopted.



Insist on a...

ONE YEAR WARRANTY

when you buy an electric fork truck

All Baker battery-powered industrial trucks—including fork, platform, crane trucks and tractors—are warranted against defects for a full year from date of shipment.

As a truck purchaser, you should accept nothing less.

A one-year warranty assures you that the manufacturer has complete confidence in the materials and workmanship that go into his product. It gives you twelve months protected operation of the truck *under your conditions*—allowing ample time to detect imperfections, which might not show up during a 30, 60 or 90 day guarantee period.

Baker Trucks have a half-century reputation for outstanding performance, long life and low maintenance. For example: a fleet of the first Baker ram trucks ever built is still in service at a large midwestern steel mill after 32 years!

Let a Baker handling engineer give you the full story, or write for Bulletin 54B.

Baker
handling equipment

THE BAKER-RAULANG COMPANY

1253 WEST 80th STREET • CLEVELAND 2, OHIO

Subsidiary of Otis Elevator Company

6E1

For More Information Circle No. 367 on Inquiry Card—Page 17



There are all types of tape on the market but —

CHASE TAPES ARE YOUR BEST INVESTMENT!

Chase electrical tapes do not vary from day to day . . . because they are consistently made to the highest specifications . . . of the best materials available. Chase tapes are engineered to meet the most exacting of electrical requirements . . . by specialists who take pride in making the best cable tapes and electrical insulating materials on the market.

The industry has diversified requirements . . . so Chase tapes are made in a very wide range of materials to meet them. Whatever your needs . . . binding, insulating, ozone resistance, etc. . . . you can find a Chase tape to do the job.

Attach the check list to your letterhead for detailed information on the type of tape you need . . . and send to CHASE & SONS, INC., RANDOLPH, MASSACHUSETTS

CLIP TO YOUR LETTERHEAD AND MAIL TODAY!

Please send Chase Electrical Insulation File. I am especially interested in:

- ☐ Insulating Tape
- ☐ Binder Tape
- ☐ Jacket Tape
- ☐ Moisture Seal Tape
- ☐ Neoprene Tape
- ☐ Flame Retardant Binder
- ☐ Conductivity
- ☐ Ozone Resistance

CHASE

ELECTRICAL INSULATING TAPES AND MATERIALS

For More Information Circle No. 345 on Inquiry Card—Page 17



Angle for saving money

THERE are a hundred and one varied metal cleaning jobs in every plant. And, there's an Osborn power brush *to do every job.*

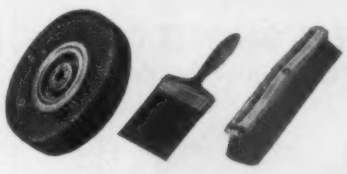
High-speed, rugged-action Osborn power brushes clean any metal surface faster, more thoroughly . . . save time on the job. Unsurpassed wear resistance saves on brush replacements.

No matter what your industrial brush needs—paint, maintenance or power—you'll always be money ahead if you specify . . . OSBORN. Write today for Osborn Catalog 210-B. *The Osborn Manufacturing Company, Dept. U-26,5401 Hamilton Avenue, Cleveland 14, Ohio.*



One plant saves money buying lower-cost angle iron with mill scale still on it . . . then cleaning it quickly and easily with Osborn Master® Wheel power brushes.

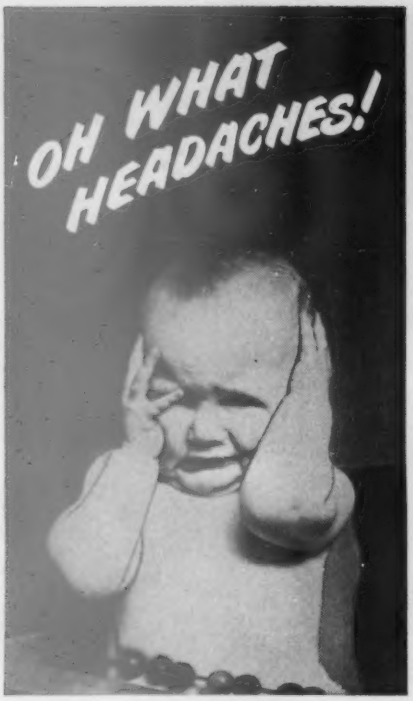
Osborn Brushes



OSBORN

BRUSHING METHODS • POWER, PAINT AND MAINTENANCE BRUSHES
BRUSHING MACHINES • FOUNDRY MOLDING MACHINES

For More Information Circle No. 368 on Inquiry Card—Page 17



WISH I HAD ORDERED FROM GARRETT

They never let you down on deliveries when you have to keep production going full speed.

You get *what* you order *when* you order it . . . from Garrett. No waiting for late shipments. You can't beat Garrett service. No worries about Garrett . . . quality. Every Garrett washer, hose clamp, stamping or assembly is right up to the peak of quality. High quality is assured by Garrett's "statistical quality control" system.

Next time no more headaches for me. I'll order from Garrett. Why don't you do the same when you need . . .

LOCK WASHERS
FLAT WASHERS
HOSE CLAMPS
STAMPINGS

Manufactured by

GEORGE K. GARRETT CO., Inc.
Philadelphia 34, Pa.

Garrett
OF PHILADELPHIA

For More Information Circle No. 369 on Inquiry Card—Page 17

industry

A new 10,000 sq. ft. addition, costing $250,000, has been completed by **Techalloy Co., Inc., Rahns, Pa.,** wire, rod and strip manufacturer. The new facilities triple the annealing capacity of stainless steels in sizes ranging from ¼" to .002" diameter.

Heyden Chemical Corp., New York, has completed a new plant at Fords, N. J. The plant has an annual capacity of 25 million pounds of pentaerythritol, an ingredient used in the manufacture of weather-resistant, quick drying, paints, enamels, resins and other surface coatings.

Bumpers, Inc., manufacturers of reversible dock and truck bumpers, has been purchased by **Rowe Methods, Inc., Cleveland,** makers of hydraulic dock leveling devices. Bumpers will operate as a wholly owned subsidiary of Rowe.

Haws Drinking Faucet Co., Berkeley, Calif., has purchased the Kramer Mfg. Co., San Francisco, manufacturers of flush valves. Kramer is now the Kramer Flush Valve Division of Haws.

The Palnut Co., Mountainside, N. J., makers of lock nuts and fasteners, has moved to its new plant, doubling its capacity.

Plans for the erection of a major electronics manufacturing plant in the Denver area have been announced by **The Ramo-Wooldridge Corp., Los Angeles.**

To meet the demand for extruded aluminum sprinkler irrigation tubing in eastern, southeastern and middle western area of the country, **Reynolds Metals Co., Louisville,** has established warehouses in St. Louis, Mo., and Birmingham, Ala.

TOLEDO

No. 999 *Faster Than Ever!*



Instant Die Change
Spin Torque Chucking
High Speed Threading

Toledo Spin Torque Chuck For Faster Production

Quick change features of the TOLEDO No. 999 Pipe Threading Machine have proved real time and money savers on hundreds of jobs. Now . . . with the addition of the Toledo Spin Torque Chuck even faster production is provided. Instant changeover from cutting to threading . . . Spin Torque Chucking—a quick spin and pipe up to 2" is locked in the chuck—no wrenches, no rocking, socking or hammering. Bench type or portable floor models, full ½ H.P. motor powers heavy gear train drive, finger tip controls. Remember—if it bears the TOLEDO label you know it's a dependable product. See it at your suppliers or write for complete information. The Toledo Pipe Threading Machine Co., 1445 Summit Street, Toledo 4, Ohio.





THE TOLEDO PIPE THREADING MACHINE COMPANY
1445 Summit St. TOLEDO 4, OHIO

BUILDERS OF THE WORLD'S FINEST PIPE TOOLS
TOLEDO
PIPE THREADERS • PIPE WRENCHES • PIPE MACHINES

For More Information Circle No. 370 on Inquiry Card—Page 17

REVERE *Aluminum* *and the '56* PACKARD *Royal Look*

It is fitting that the new Packard, a car of royal distinction, should face the world with a grille that has the look of gold. It is, in fact, of gold-anodized aluminum,* so authentic in appearance that it cannot be told, by the eye alone, from 18 karat gold.

Here is far more than another advance in motor car styling. For this grille of Revere Aluminum not only lightens the front end but is strong and rust-proof, with a finish that will not tarnish or peel. Aluminum is the only metal that lends itself so perfectly to finishing of this type. The hues of the rainbow and more are attainable . . . but the aluminum, itself, must be right. The choice of Revere Aluminum for this exacting function is a further indication of how thoroughly Revere knows its A-B-C's in metals— "A" for Aluminum, "B" for Brass, "C" for Copper.

If you are using aluminum or planning to, you can turn to Revere with confidence for sheet, tube, pipe, extruded shapes, bus conductors, forgings and foil. Why not call the nearest Revere office now? In all principal cities. Revere Copper and Brass Incorporated, Founded by Paul Revere in 1801. Executive Offices: 230 Park Avenue, New York 17, N. Y.

*Grille is of Revere Aluminum Sheet. Before anodizing to give it the gold color and protective coating, it is skilfully perforated by The Harrington & King Perforating Co. of Chicago; and accurately formed by Automotive Stamping & Manufacturing Co. of Detroit.



For More Information Circle No. 371 on Inquiry Card—Page 17



If your sawing costs are mounting because you're not getting consistent low-cost operation, maximum production, and minimum downtime, call your Victor Distributor. He's the man who can bring your costs down to eye level. Once he's listened to your troubles, he'll recommend the *right* Victor Hand and Power Hacksaws, Metal and Wood Cutting Band Saws, and Hacksaw Frames for all your needs.

Your Victor Distributor will especially want to tell you about Victor "Moly"® High Speed steel blades. He'll tell you that "Moly" blades can save you real money because they outlast standard steel blades 10 to 1, cut as well as the *best* high speed steel blades made, and yet are substantially lower in cost!

And be sure to ask your Victor Distributor for a supply of our NEW Metal Cutting Booklets and Wall Charts. They're packed full of interesting information.

Sold Only Through Recognized Distributors

1890

VICTOR

SAW WORKS, INC., MIDDLETOWN, N.Y., U.S.A.
MAKERS OF HAND AND POWER HACKSAW BLADES, FRAMES, AND METAL AND WOOD CUTTING BAND SAW BLADES

For More Information Circle No. 372 on Inquiry Card—Page 17

suppliers

Peter Stefan has been named sales manager of **Alloy Metal Wire Division, H. K. Porter Co., Inc., Prospect Park, Pa.**

The New York Air Brake Co., New York, has named Elmer V. Mrozek as representative in Chicago for its Hydreco and Dudco divisions.



Dave Byrd

Gar Wood Industries, Inc., Wayne, Mich., has appointed Dave Byrd as sales manager for Gar Wood Load-Packer refuse collection bodies.

Acme Rubber Mfg. Co., Trenton, N. J., has announced the appointment of J. V. Carlin, Jr., as assistant general sales manager.

The Electro Minerals Division of The Carborundum Co., Niagara Falls, N. Y., has assigned four abrasive grain specialists to the field. R. Stanley Burt will cover metropolitan Chicago and designated areas of Wisconsin, Illinois and Iowa. Edward J. Schultz will service the Michigan and Toledo, O., area. Robert A. Murphy will handle New England. And, Joseph M. Morin will cover metropolitan New York and the New Jersey area.

Save this needless towel expense



Supply SANITOR SEAT COVERS



Makeshift measures for personal sanitation are always more expensive than Sanitor Tissue Seat Covers. Sanitor savings of several dollars a year per stall is not uncommon.

Employees, customers, visitors always appreciate such thoughtfulness. Rest rooms stay cleaner, longer—also a saving.

Sanitor tissues come in a neat dispenser. They are self-removing, self-disposing. Samples on request.

Sanitor

TOILET TISSUE SEAT COVERS

A good idea for plant and office—write

SANITOR MFG. CO.
KALAMAZOO, MICHIGAN

For More Information Circle No. 373 on Inquiry Card—Page 17

USER SAYS TAP LIFE UP 43% ON THIS THIN-WALLED CASTING



...thanks to

FERROCARBO®

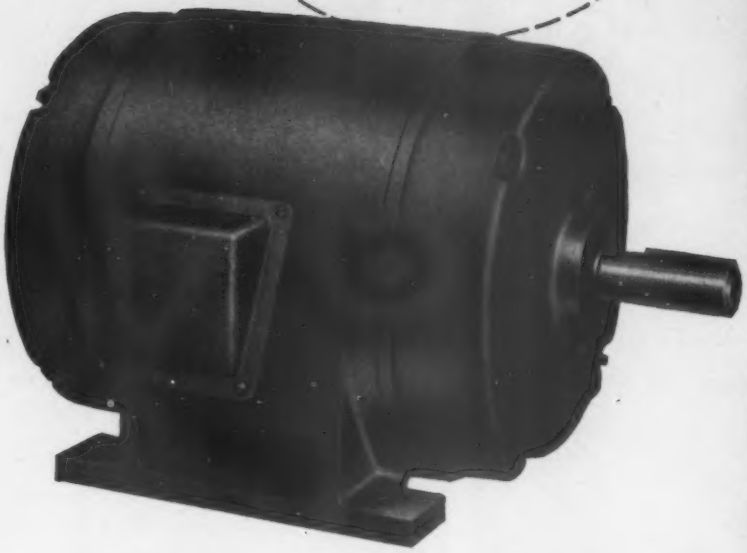
Users everywhere report similar experiences. In fact, on 67 machining tests in 11 large machine shops, castings of gray iron treated with FERROCARBO averaged 89.5% greater machinability per tool than untreated castings. These premium castings are finer-grained, denser, stronger, yet they COST YOU NO MORE... because your foundryman, using FERROCARBO, makes worthwhile savings in raw material costs.

FOR FREE BOOKLET on FERROCARBO, citing actual case histories of faster machining, with longer tool life, write The Carborundum Company, Dept. 36, Niagara Falls, N.Y. 64-66

CARBORUNDUM®

For More Information Circle No. 374 on Inquiry Card—Page 17

Wagner®
ELECTRIC MOTORS
...the choice of leaders in industry

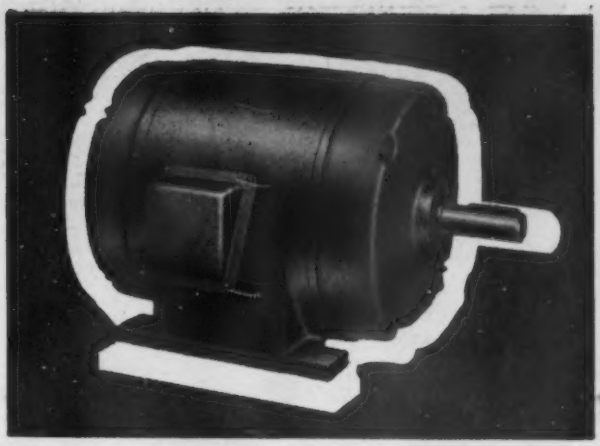


You get better performance with these Wagner DP Motors

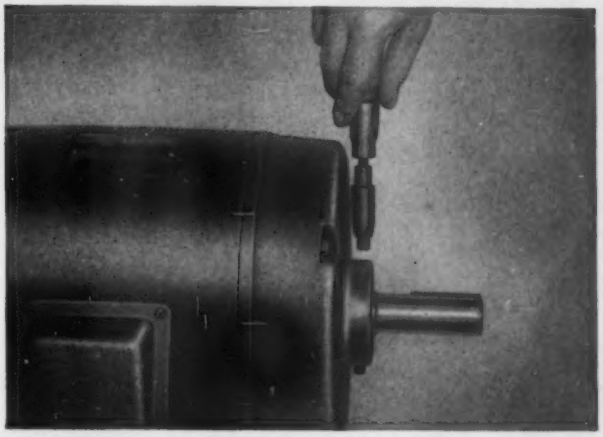
Wagner DP motors are *doubly protected* by (1) rugged, corrosion-resistant cast iron frames, smoothly rounded so that no moisture can collect on them. Motor feet are cast as an integral part of the frame for maximum strength and rigidity. (2) Enclosures on the DP motor are completely drip-proof—virtually splashproof. Air intakes are located at the bottom of the endplates and air outlets are located at the base of the frame—one on each side.

Although engineered to meet the re-rated NEMA specifications which call for more power in smaller frames, the same high quality and long life performance that have made Wagner Motors "the choice of leaders in industry" for many years has of course been retained.

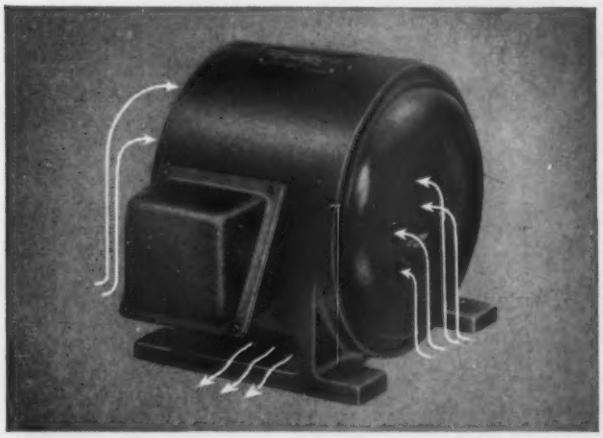
Full information and principal dimensions are given in Bulletin MU-202. Write for your copy today.



MORE POWER IN SMALLER FRAMES The Wagner DP Motor packs more power in a smaller frame and this smaller size means ease of handling and stocking... less space required for installation.



CAN BE RE-GREASED FOR LONGER LIFE This motor will operate for years without regreasing... bearings are completely enclosed ...however, provisions have been made for adding lubricant and for the removal of old grease in cases where re-greasing is necessary.



COOL RUNNING Specially designed baffles direct cooling air from the blowers through the motor and provide protection for the stator windings. Blowers are an integral part of rotor... and move large volumes of air without noise or vibration.

Wagner Electric Corporation
6360 Plymouth Ave., St. Louis 14, Mo., U.S.A.

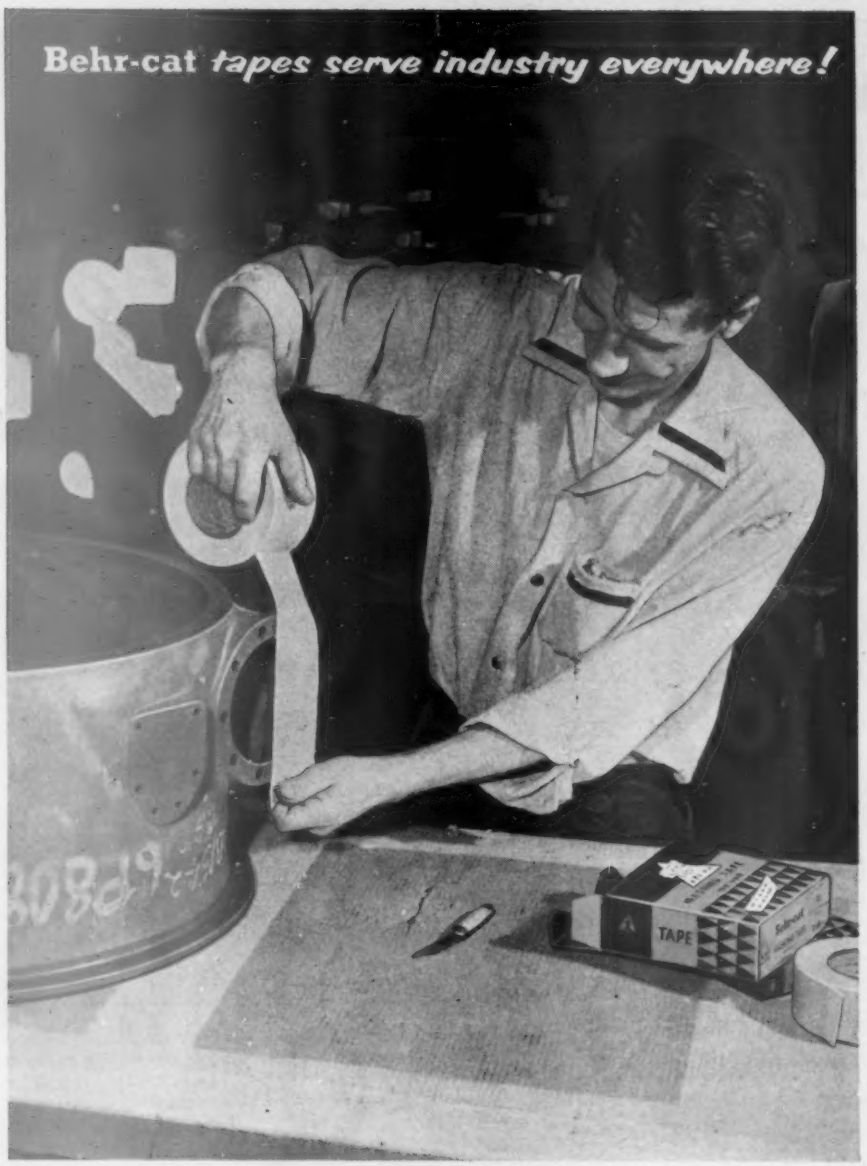
BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

Wagner Electric Corporation EST. WE 1891

M56-4

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

For More Information Circle No. 375 on Inquiry Card—Page 17



For fast, tricky masking jobs

Behr-cat No. 109 is tops for production-boosting and cost-saving operations all through the plant. It unrolls easily, sticks at a touch, holds tight on curves and lifts off cleanly. Put Behr-cat No. 109 Masking Tape to the test. Behr-Manning, Troy, N. Y.



In Canada: Behr-Manning (Canada) Ltd., Brantford.
For Export: Norton Behr-Manning Overseas Inc., New Rochelle, N. Y., U. S. A.

T-4

BEHR-MANNING® division of NORTON Company

▲ COATED ABRASIVES
▲ SHARPENING STONES
▲ PRESSURE-SENSITIVE TAPES

For More Information Circle No. 376 on Inquiry Card—Page 17

suppliers

Pittsburgh Plate Glass Co., has announced new sales appointments. Marvin W. Marshall is now director of automotive sales. Joseph C. Thompson, Jr., has been named to the newly created post of general manager—trade sales finishes of the paint and brush division. And, Guy J. Berghoff is now general manager of paint sales for the merchandising division.

The Pfaudler Co., Rochester, N. Y., has announced the appointment of Alton L. Gray as assistant



E. N. Fox



R. C. Silver



A. L. Gray

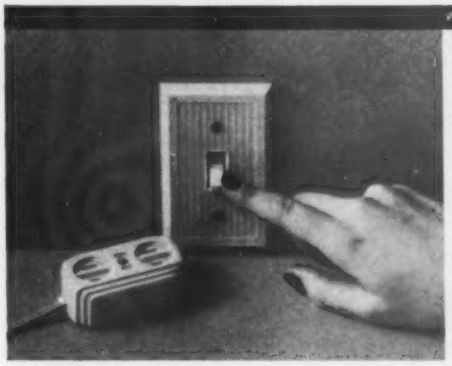
general sales manager. In addition, Edgar N. Fox, Jr., replaces Mr. Gray as Rochester district sales manager, and Robert C. Silver replaces Mr. Fox as field sales engineer in the Rochester-Niagara Frontier District.

Kling Bros. Engineering Works, Chicago, has appointed Joseph M. Dorocke as general sales manager.

Opportunity materials—
Cyanamid Plastics and Resins



FIRST ALL-PLASTIC AEROSOL is marketing news! At last—a spray dispenser with the beauty of *quality* plastic: Cymel* Melamine Molding Compound! It offers new design possibilities in unlimited colors . . . feels warm and pleasant in the hand . . . resists breakage and corrosion. Here's a smart packaging opportunity for many marketers of aerosols!



THE MODERN, SAFE LOOK in wiring devices—ivory-colored BEETLE® urea plastic. Lighter and more cheerful than old-fashioned dark colors and safe, too! Look for the UL seal. BEETLE is rugged, hard, and resists heat and discoloration. If you make, sell or buy current-carrying devices, be sure they're adequate for safe wiring. Be sure they're BEETLE!



NOR SNOW, NOR RAIN, NOR HEAT ...will spoil the gleaming beauty of a melamine resin baked finish. Gloss, weather resistance and mar resistance combine to make melamine finishes first choice for automobiles...for household appliances and industrial equipment, too. Look to Cyanamid—the leader in melamines—as your source of supply.



NEW MATERIAL FOR PRODUCT DESIGN...low-cost, easy-molding Pre-mix compounds of LAMINAC® Polyester Resin and fibrous glass. The LAMINAC pre-mix lightning arrester caps (right) used on telephone lines, for example, weigh 84% less than former ceramic counterparts (left) *and* provide much greater impact strength. Pre-mix polyester can cut costs, simplify production, reduce maintenance and replacement.

*Trademark

Come to Cyanamid for thermosetting plastics (melamines, ureas, polyesters)...resin adhesives...resins for surface coatings.

OFFICES IN:
Boston • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Detroit
Los Angeles • New York • Oakland • Philadelphia • St. Louis • Seattle

IN CANADA:
North American Cyanamid Limited, Toronto and Montreal

CYANAMID

AMERICAN CYANAMID COMPANY
PLASTICS AND RESINS DIVISION
30C Rockefeller Plaza, New York 20, N. Y.

For More Information Circle No. 377 on Inquiry Card—Page 17

TOLERANCES ARE TOLERANCES . . . or are they?



L. A. Edwards

ASST. SALES MGR., THE CINCINNATI GEAR CO.

Our customers' gear specifications call for many different and often critical tolerances . . . say .0002" or .0003" or whatever they may feel is required for their product. Unless asked, we don't question a customer's specifications, but in some cases we've wondered why particularly close tolerances were called for — and if they were worth the *added cost*. We had an occasion to talk to one customer recently about some gears they had us make to .0002" pin size limit. This firm also made some of its own gears. We asked this man if they had any trouble adhering to such strict tolerances and he said yes they did, but if their parts were "close enough" they used them anyway!

Now, this hardly seems logical — for if his own gears, made to slightly more liberal tolerances, were satisfactory for the job, he could have saved his company some money by being more realistic in his tolerance demands of us. We're not just trying to be philanthropic; it's a purely practical matter for us: unnecessarily critical requirements force us to enter a higher bid and so make our work more expensive than need be. Thus he paid more than necessary for the gears to do his job, and we ran the risk of losing a good customer. That's why we're always happy to see a customer go over his specifications with a sharp pencil.

THE CINCINNATI GEAR CO.

CINCINNATI 27, OHIO

"Gears — Good Gears Only"

CINTI



For More Information Circle No. 378 on Inquiry Card—Page 17

suppliers

Cadillac Plastic and Chemical Co., Detroit, has been appointed a distributor of Marco polyester resins by **Celanese Corp. of America, New York,** and Krene flexible vinyl material by **Bakelite Co., division of Union Carbide and Carbon Corp., New York.**

The Yale & Towne Mfg. Co., Philadelphia, has announced some new sales appointments. Otto F. Bender, district hoist sales manager in New York state, is now manager in charge of hoist sales



T. J. Simendinger



F. E. Rau

in the Cleveland-Akron industrial area. Theodore J. Simendinger is now hoist district sales manager for eastern Pennsylvania, southern New Jersey, Delaware, Maryland and Washington, D.C. William H. McManus is now a sales representative in the same territory. Fred E. Rau, former hoist equipment district sales manager in Cleveland, has been named to the newly created post of assistant hoist sales manager.

Graybar Electric Co., Inc., New York, has opened a new office and warehouse at 745 E. Third St., Lexington, Ky.

David R. Lurie is now sales manager of **The Joclin Mfg. Co., North Haven, Conn.**

The appointment of Edward S. Maury as general sales manager has been announced by **Marion Electrical Instrument Co., Manchester, N. H.**

George F. Long has been appointed by **Inland Steel Co., Chicago,** as assistant manager of sales of reinforcing bars.

The Carpenter Steel Co., Reading, Pa., has made John E. Newlin, Jr., manager of tool steel sales.

Oakite Products, Inc., New York, has appointed John A. Prevel as technical service representative to the metal industries in Long Beach, Calif.

Stuart J. Swensson, Jr., is now general sales manager of galvanized ware for **The Witt Cornice Co., Cincinnati.**

William B. Ross has been assigned the Alabama-Tennessee territory by **The Fairbanks Co., New York.**

The appointment of Michael Gladstone as sales manager has been announced by **Alloy Precision Castings Co., Cleveland.**

A. W. Cash Co., Decatur, Ill., has appointed J. W. Cherry Co., Shreveport, La., as its agent for the Cash Standard line of automatic valves, controllers, governors, and regulators. Also, for the Cash Standard Stacon line of temperature regulators. The territory of the Cherry Co. includes northwest Louisiana, southern Arkansas, and northeast Texas.

The appointment of Perry C. Smith as manager of the Equipment Department has been announced by **Brush Electronics Co., Cleveland.** He will direct sales activities of the department, which includes recording systems, amplifiers and direct writing oscillographs, sound measurement instruments, industrial inspection equipment and computer and tape storage devices.

Roland S. Sawdey has been made manager of the Detroit sales district by the **Cellulose Products Department, Hercules Powder Co., Wilmington, Del.** He succeeds Emmett E. Hixon, who has been named manager of plastics sales by the department.

MEMO

TO Engineering Dept.

SUBJECT

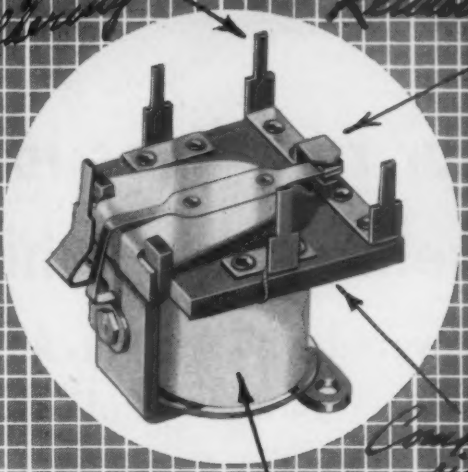
MINIATURE SENSITIVE RELAY (TYPE MS)

(IDEAL FOR PRINTED CIRCUITS)

Note desired RBM features will cut Our Assembly Costs

Self locking terminals position Relay before soldering

X-Bar Contacts insure ultimate in Circuit Switching Reliability



Compact size

Coil Construction meets unusual climatic conditions

The type MS is an ideal relay for any application requiring a sensitive, compact, highly reliable single pole D.C. device; where a low cost solution is required because of volume usage and competitive problems.

Printed circuit terminals are designed with snap-in feature which holds the relay in printed circuit board without lugging prior to solder dip.

Other versions of the MS relay are available with standard solder type terminals and insulating base, where required. Also with four N.O. isolated circuits having common make. While not yet in production, a ultra-sensitive version has been developed.

The cross bar contacts used in the type MS relay were developed by the communications industry to overcome the malfunction of conventional contacts when transferring or switching low power loads. They have proven to be extremely reliable and have solved the problem of circuit continuity under adverse conditions.

A molded bobbin design has eliminated the problem of coil failure on sensitive applications under severe climatic environments.

Since industry has already used over a million R-B-M type MS relays, you are assured that your most exacting requirements will be more than satisfied when you specify it as a component for your product.

OTHER VERSIONS



SOLDER TERMINALS
4 isolated circuits with common make contact.



INSULATED BASE
Solder terminals mounted on insulating base.



EXTRA SENSITIVE VERSION

Send for Descriptive Bulletin MS-1

RBM DIVISION

ESSEX WIRE CORPORATION, *Logansport, Indiana*

CORD SETS
WIRE HARNESSES
MAGNET WIRE
OTHER PRODUCTS

R·B·M WIRE PRODUCTS

For More Information Circle No. 379 on Inquiry Card—Page 17



Your roof lives longer behind this "shield"

. . . covered with Asphalt-Aluminum Roof Paint or Coating!

That's right. You can actually put a protective shield right over your built-up or rustable metal roofs with a good aluminum roof coating.

This "shield" slows decomposition of roofing material and *reflects the sun's heat.*

As the coating is applied, tiny aluminum flakes rise to the surface and *leaf.* When dry, the aluminum shield is firmly bound to your roof—a non-rusting metallic surface.

The result? Roof maintenance is cut down drastically. The aluminum coating adds *years* to roof life. Buildings are up to 15° cooler inside on heavy, hot days. Air conditioning costs come down. Work output goes up. Ask the paint salesman who calls on you to show you the heat reflection demonstration that proves asphalt-aluminum's cooling effect.

Look for Asphalt-Aluminum roof paints or coatings with the Warranty Seal. It is your assurance of an approved vehicle and at least two full pounds of pure aluminum pigment in every gallon.

Reynolds doesn't make aluminum paints. If you would like the names of manufacturers who rely on the high quality of genuine Reynolds Aluminum pigments, we'll gladly send you the list. Just use the coupon below.

See "Frontier," Reynolds exciting dramatic series, Sundays, NBC-TV

ALUMINUM PAINT FOR PLANT MAINTENANCE

Resists rust, smoke and fume corrosion, moisture—reduces evaporation of volatiles —reduces expansion—renews appearance —greatly increases plant lighting efficiency. One coat lasts and lasts. Paint on protection—with Aluminum Paint!

Reynolds Metals Company
P.O. Box 1800-PP, Louisville 1, Kentucky
Please send me information about:
☐ Aluminum Roof Coatings.
☐ Aluminum Paints.
☐ Also send me list of manufacturers.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

The Finest Paints Made with Aluminum are made with REYNOLDS ALUMINUM PIGMENT

By the makers of Reynolds Wrap

For More Information Circle No. 380 on Inquiry Card—Page 17

suppliers

John J. Refieuna has joined **Raybestos-Manhattan, Inc., Passaic, N.J.,** as a sales engineer in the firm's western sales district. He will work out of R/M's Chicago office.



W. H. Mouquin



C. C. Bray

W. H. Mouquin has been named district manager for the Chicago office of **De Laval Steam Turbine Co., Trenton, N. J.** At the same time, it was announced that C. C. Bray had been appointed regional sales supervisor at the same office.

Electric Steel Foundry Co., Portland, Ore., has formed a central sales district in Danville, Ill. Manager of the new district is Tom P. Kirby, former manager of the Gulf and Atlantic, and midwest branches.

Donald K. Wright has been named manager, by-product sales, of **American Smelting and Refining Co., New York.**

H. Gene Miller is now an abrasive engineer for **Bay State Abrasive Products Co., Westboro, Mass.** Mr. Miller covers Minnesota and part of Wisconsin.

James A. Myers has been appointed a field sales engineer for the **Rectifier-Capacitor Division, Fansteel Metallurgical Corp., N. Chicago, Ill.** He will serve the Cleveland-Detroit-Buffalo area, including western Pennsylvania and West Virginia.



now..a *New* resilient floor treatment for **maximum safety underfoot**

Complete protection with complete safety.

Super Hilco®-Lustre FLOOR POLISH



Now at long last . . . . . .

"Slip Resistance" PLUS—

TOUGHNESS — to withstand heavy traffic.

RESILIENCY — to eliminate brittleness, chipping and flaking.

HARD FILM — to guard against soft tacky surface that foot-marks, catches and holds dirt.

Easy Sweeping — no drag on mop. Soil and dust sweeps free.

Stays Cleaner Longer — Less frequent scrubbing and damp mopping — Dirt and dust will not become embedded.

Fewer Recoatings Necessary — Saves material and labor costs.

Withstands Water Spillage — Will not turn white.

Lustre Buffs Back to like new appearance.

Traffic Lanes Patch in without recoating entire area.

Can Be Removed like water emulsion waxes.



ASK YOUR NEARBY HILLYARD MAINTAINEER ® to demonstrate **SUPER HILCO-LUSTRE**

— another Hillyard First — Tested and Proved. The Maintaineer is a trained floor consultant, experienced in solving the most difficult floor problems. He is "On Your Staff, Not Your Payroll"

ST. JOSEPH, MISSOURI
Passaic, N. J.
San Jose, Calif.

In our 49th Year of Service

HILLYARD, St. Joseph, Mo.

Without obligation, please have the Hillyard Maintaineer nearest me PROVE that Super Hilco-Lustre is what my floors need.

Name _____

Institution _____

Address _____

City _____ *State* _____

For More Information Circle No. 381 on Inquiry Card—Page 17

6 WAYS to save Building and Maintenance Dollars



Continental® Chain Link Fence can serve you profitably...

Low Cost Storage Space
Permanent Dignified Protection
Reduces Number of Watchmen
Minimum Maintenance
Prevents Accidents
Controls Entrances & Exits

Chain Link fence can do the work of expensive brick and mortar and save on building costs . . . by enclosing storage areas, protecting supplies, reducing insurance rates. In Continental Chain Link Fence you get *stronger, longer lasting* fence, with more features, and lowest maintenance. PLANNED PROTECTION tells the whole story. Write for a copy today.

KONIK STEEL®

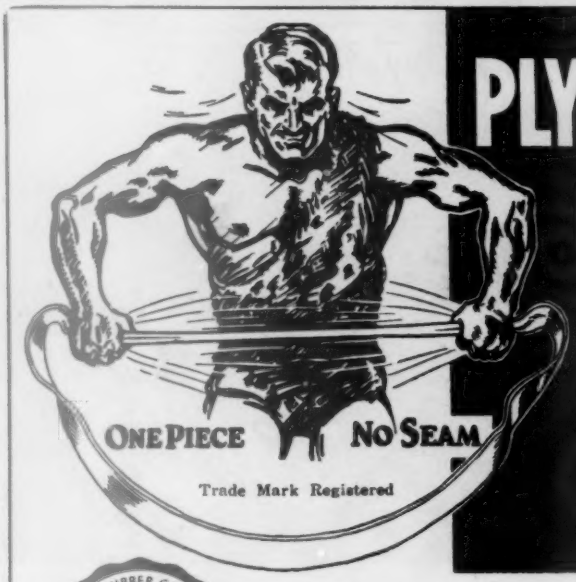
Contains copper, nickel and chromium for higher tensile strength and increased rust resistance.

The only fence made of KONIK® STEEL

CONTINENTAL
STEEL CORPORATION · KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, shapes, tempers and finishes, including Galvanized, KOKOTE, Flame-Sealed, Copered, Tinned, Annealed, Liquor Finished, Bright, and Special Wire. Also coated Steel Sheets, Nails, and other products.

For More Information Circle No. 382 on Inquiry Card—Page 17



PLYMOUTH Rubber Bands

OUTSTRETCH
OUTLAST
ALL OTHERS

PLYMOUTH RUBBER COMPANY, INC. 60th Anniversary QUALITY SINCE 1896 CANTON, MASS. U.S.A.

PROMPT DELIVERY

- Bands for Every Purpose
- Saves Time and Labor in Production
- We'll Make Them for Your Special Needs

Guaranteed by Good Housekeeping — REPLACEMENT OR A REFUND OF MONEY IF NOT AS ADVERTISED THEREIN

NATIONALLY DISTRIBUTED . . . AVAILABLE AT YOUR REGULAR SUPPLIERS

All Plymouth Standard Bands Made to Federal Specifications

PLYMOUTH RUBBER COMPANY, Inc., Canton, Mass.

For More Information Circle No. 383 on Inquiry Card—Page 17

suppliers

The Norton Co., Worcester, Mass., has named three men to new managerial sales posts. Robert Cushman, formerly west coast district manager, is now assistant to the sales manager,



R. Cushman



H. G. Brustlin

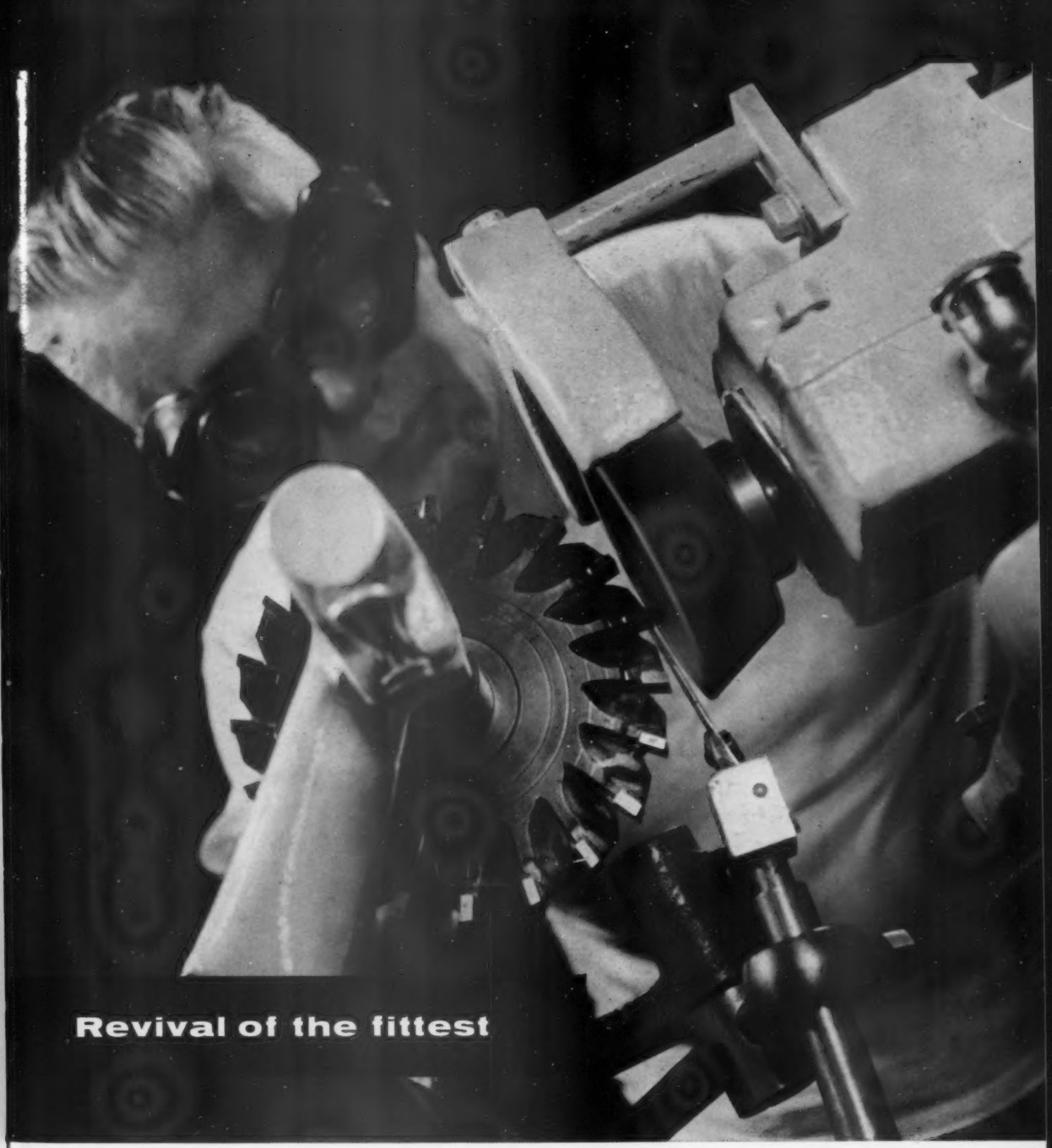


D. F. Jones

grinding wheels, and will return to Norton's main office in Worcester. Harry G. Brustlin, formerly an abrasive engineer in the Los Angeles area, succeeds Mr. Cushman as west coast district manager. Donald F. Jones, formerly an abrasive engineer in the Syracuse, N.Y., area, has been appointed Pittsburgh district manager.

The Fisher-Pierce Co., Inc., Boston, has named Dolan-Feldhaus Co., Minneapolis, as a representative, Dolan-Feldhaus will handle Minnesota, North and South Dakota, and portions of Iowa and Wisconsin.

For More Information Circle No. 384 on Inquiry Card—Page 17→



Your best first step in giving dull cemented carbide tools a new lease on life is to select a "Green-Grit" silicon carbide wheel by CARBORUNDUM. For milling cutters and other multiple-point tools, where finer finishes are required, "Green-Grit" resinoid bond wheels offer superior form-holding ability. Even with heavier infeeds, they cut free and cool. In roughing operations, where stock removal is more important than finish, you'll find "Green-Grit" vitrified bond wheels your best bet. They permit both steel and carbide to be ground together—with outstanding results.

Your CARBORUNDUM Distributor or salesman can help you choose the right "Green-Grit" wheel for every job. Call him today. For Booklet A-1208 on carbide grinding, write The Carborundum Co., Niagara Falls, N. Y. In Canada: Canadian Carborundum Co., Ltd., Niagara Falls, Ont.

Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar



King of the wide frontier

Installed for experimentation at CARBORUNDUM's Coated Abrasives plant in Niagara Falls, this spectacular new precision belt-grinding machine grinds a single piece 40 feet long by 86 inches wide *in one operation*. It's the largest machine of its kind in the world, and it opens brand new frontiers in grinding to close tolerances on many previously "impossible" jobs. By quick changes of abrasive belt, any variety of micro-finishes can be obtained. Even precision tapers and complex profiles are achieved automatically. CARBORUNDUM's many years of engineering skill in solving abrasive belt problems for industry resulted in this new wide-belt concept of precision grinding. For complete information write The Carborundum Company, Niagara Falls, New York. In Canada: Canadian Carborundum Company, Ltd., Niagara Falls, Ont.

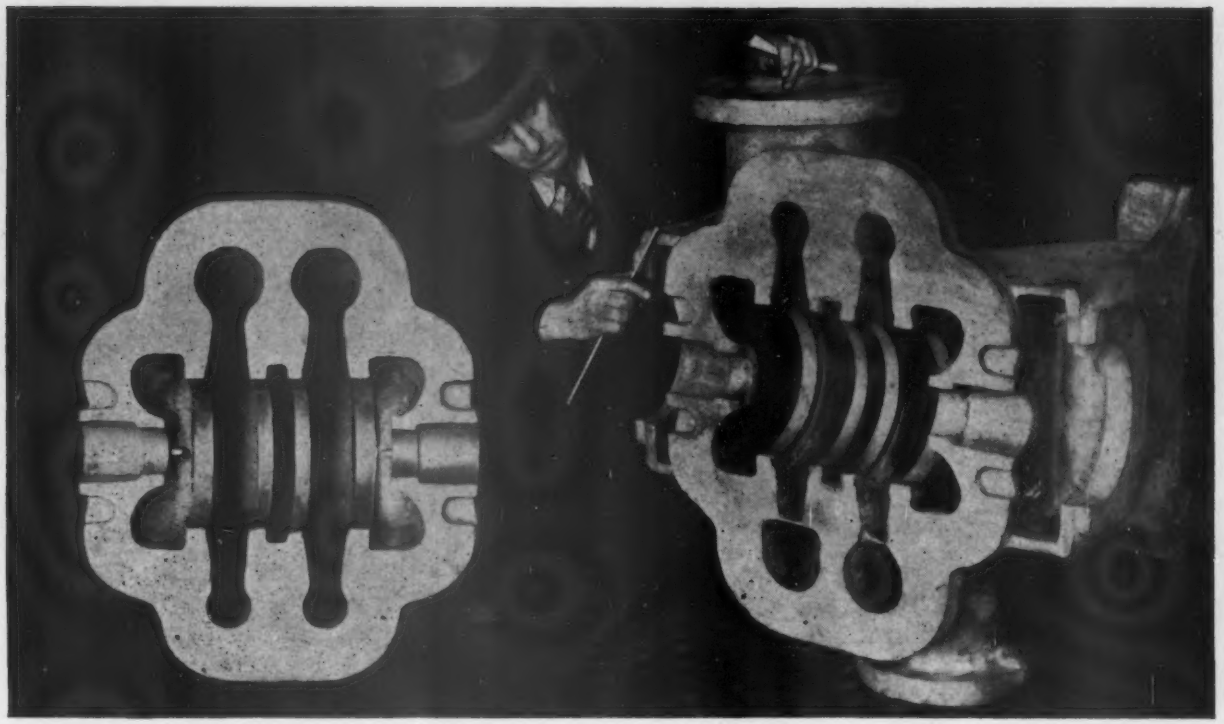
Through application "know-how" and product quality

CARBORUNDUM

REGISTERED TRADE MARK

continually puts more sense in your abrasive dollar





There's NO problem in Stainless Castings that we can't answer for you—



Write for this book on AL STAINLESS STEEL CASTINGS

32 pages of valuable and complete data on stainless castings: analyses, properties, technical data on handling and heat treatment, typical applications, how to order, etc.

ADDRESS DEPT. P-76

Odd shapes or intricate sections are certainly no problem—look at some of our stainless steel casting products illustrated above. We could show you hundreds more. And size is no consideration, either—we're equipped to handle any stainless castings—from a few ounces to thousands of pounds.

The really important point for you to consider is not the matter of shape or size, but of *experience.* The AL Buffalo Foundry is a group of specialists in high-alloy steel castings *exclusively* . . . pioneers in both the static and vertical-centrifugal methods of casting stainless steels.

For your assurance, there's a long record of years of successfully answering difficult service conditions with sound, clean-grained AL Stainless Steel castings—free from defects, easy to machine and dependable in supply. ● Let us quote on *your* stainless casting requirements. *Allegheny Ludlum Steel Corporation, Henry W. Oliver Building, Pittsburgh 22, Pennsylvania.*

WSW 5005 B

For Stainless Steel in ALL Forms—call

Allegheny Ludlum

Warehouse stocks carried by all Ryerson Steel plants

AL STAINLESS STEEL

For More Information Circle No. 385 on Inquiry Card—Page 17

TEFLON*

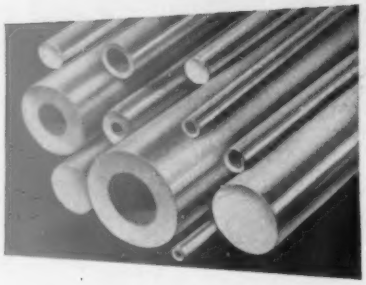
SHEET....ROD....

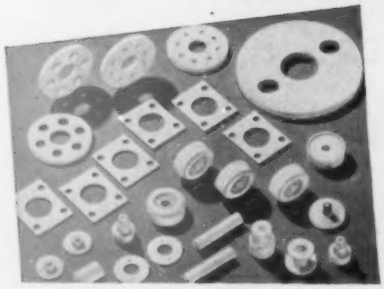
TUBING....MOLDED OR MACHINED PARTS?

YOU CAN GET JUST WHAT YOU WANT

from JOHN CRANE







"Made of Teflon by JOHN CRANE" has become practically a standard specification for parts and components subject to severe electrical, corrosive, thermal, mechanical or atmospheric abuse. Whatever your requirements in Teflon . . . sheet, rod, tubing, packings, gaskets, bellows, insulators, sealing discs or non-stick parts . . . . "John Crane" can supply them!

In addition, you get these important *plus* factors: complete uniformity throughout, high density control, freedom from flaws and rigid adherence to your specifications.

"John Crane's" complete fabrication facilities assure you prompt delivery on *exactly* what you want —no compromise. If you have an entirely new requirement, no standard design or procedure— "John Crane's" laboratory facilities, know how, research and engineering experience go to work on *your particular* need.

Now is a good time to put "John Crane" to test. Contact Crane Packing Company today.

*TEFLON *DuPont trademark*

Advantages:

CHEMICAL—Completely inert

ELECTRICAL—Extremely low power factor
Very high dielectric strength

THERMAL—Temperature range
—300°F. to +500°F.

MECHANICAL—Strong, flexible
Weather resistant

LOWEST COEFFICIENT OF FRICTION

ABSOLUTELY NON-STICK

Crane Packing Co.,
6465 Oakton St.,
Morton Grove, Ill.,
(Chicago Suburb).

In Canada: Crane Packing Co., Ltd., Hamilton, Ont.



JOHN CRANE CRANE PACKING COMPANY 38 YEARS INDUSTRIAL PROGRESS

OFFICES IN ALL PRINCIPAL CITIES

For More Information Circle No. 386 on Inquiry Card—Page 17

suppliers

Edward G. McGlinchy has been named manager of plumbing brass goods sales of **Waterbury Mfg. Co., division of Chase Brass & Copper Co., Waterbury, Conn.**

O.K. Tool Co., Inc., Milford, N. H., has made Lawrence C. Gaunt sales manager.

Hanson-Van Winkle-Munning Co., Matawan, N. J., has appointed James A. Badaluco to the post of



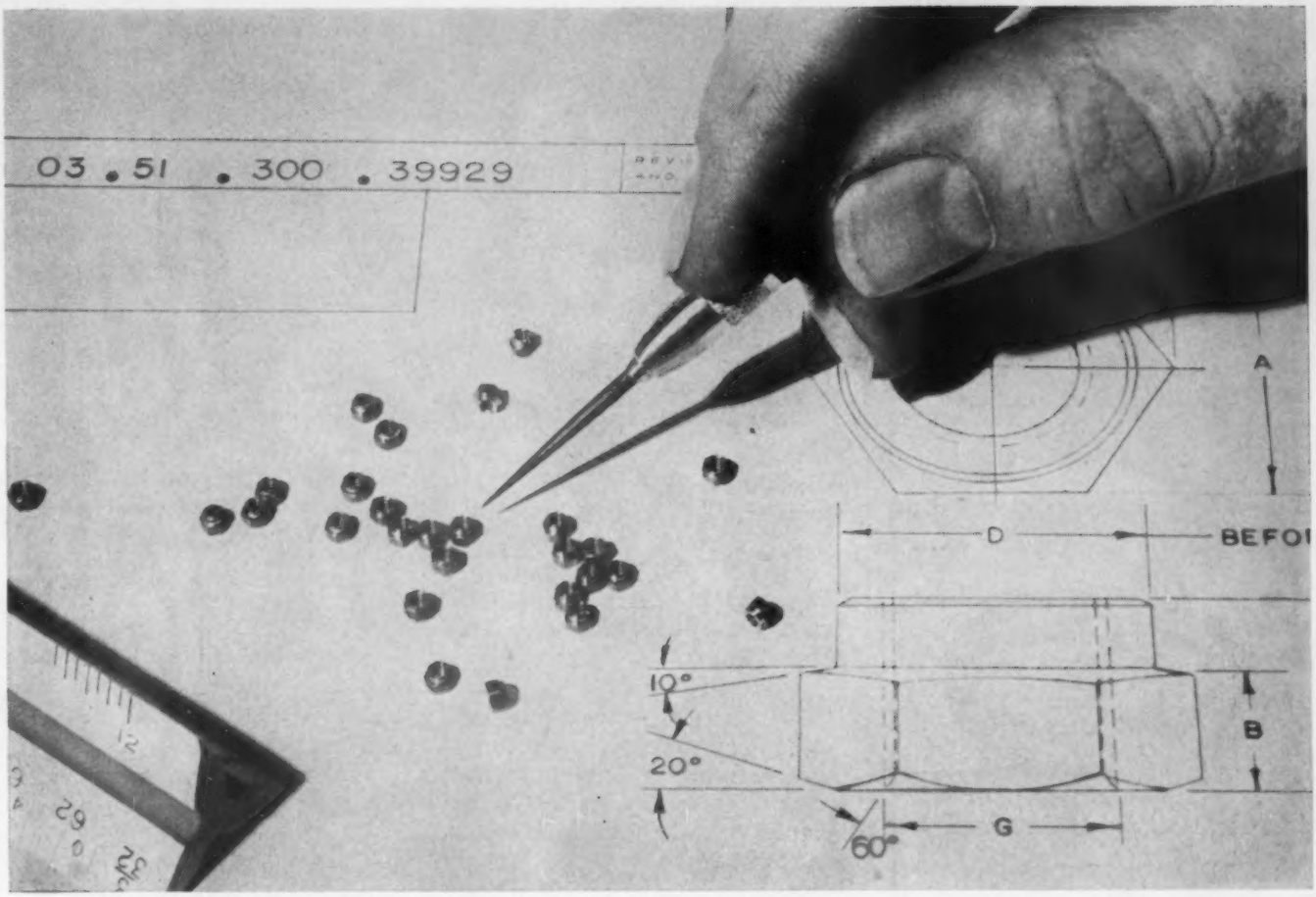
J. A. Badaluco

assistant vice president. He also continues as manager of national buffing compound sales.

A new sales office has been opened at 127 W. 7th St., Charlotte, N. C., by **Wolverine Tube, division of Calumet & Hecla, Inc., Detroit.**

Kimberly-Clark Corp., Neenah, Wis., has announced the appointment of E. C. Burch as national sales manager for industrial wadding. Arthur Croxson, who had held that post, is now assistant to the vice president in charge of sales.

The appointment of Austin L. Hawk as manager-western sales district (Chicago), has been announced by **Raybestos-Manhattan, Inc., Passaic, N. J.**



FLEXLOC MICROSIZE locknuts meet designers' needs for tiny precision nuts that retain strength and holding power in the smallest assemblies—servomechanisms, electronic and electrical equipment, all miniature devices.

Design Lighter, More Compact Products with New FLEXLOC Microsize Locknuts

Standard Microsize Locknuts Permit Design Engineers to Develop and Fasten Smaller Assemblies Safely

SIZE	Across Flats		Shoulder Height		Across Corners	Height +.000 −.003
	MAX.	MIN.	MAX.	MIN.	MIN.	
0-80 NF-3B	.111	.107	.047	.042	.123	.075
1-64 NC-3B	.127	.123	.0635	.0585	.141	.090
1-72 NF-3B	.127	.123	.0635	.0585	.141	.090
2-56 NC-3B	.158	.153	.068	.063	.176	.105
2-64 NF-3B	.158	.153	.068	.063	.176	.105
3-48 NC-3B	.190	.183	.071	.066	.210	.120
3-56 NF-3B	.190	.183	.071	.066	.210	.120
4-40 NC-3B	.190	.183	.072	.067	.210	.120
4-48 NF-3B	.190	.183	.072	.067	.210	.120

STANDARD MICROSIZE FLEXLOCs—in sizes ranging from 0-80 to 4-48—are available in brass (either plain or cadmium plated). Consult SPS for miniature nuts of other conventional materials.



New FLEXLOC Microsize locknuts are smaller and lighter than regular FLEXLOCs of the same nominal diameter. Wrenches of smaller size are used to install them. Mating joints or flanges can be designed smaller—with no loss in strength or convenience of assembly.

Microsize FLEXLOCs have all the advantages of larger FLEXLOCs. One-piece, all-metal construction—nothing to put together, come apart, lose or forget. Use them as lock or stop nuts—they stay put anywhere on a threaded member as soon as the locking threads are fully engaged. Uniform locking torques insure accurate preloading. There are no nonmetallic inserts to pop out or deteriorate. Moisture, dryness, oil, temperatures to 250°F won't affect these Microsize FLEXLOCs. Just screw them on. They lock and stay locked. Vibration won't shake them loose.

For complete information on Microsize FLEXLOCs, consult your authorized SPS distributor. Or write STANDARD PRESSED STEEL CO., Jenkintown 31, Pa.

STANDARD PRESSED STEEL CO.

FLEXLOC LOCKNUT DIVISION SPS

JENKINTOWN PENNSYLVANIA

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AMERICAN SAW & MFG. COMPANY

SPRINGFIELD, MASS.

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suppliers

The appointment of M. J. Taup as administrative assistant to the vice president-sales has been announced by **Vickers Inc., Detroit.** Succeeding Mr. Taup as manager of mobile products sales is A. M. Lane, formerly midwest regional manager.

Lawrence R. Greenhaus is now vice president in charge of sales for **Luria Building Products, Inc., Bristol, Pa.**

The Wenning Co., Worcester, Mass., has been appointed stamping sales representative for a new territory created by **Worcester Pressed Steel Co., Worcester, Mass.** The territory covers Rhode Island, the counties of Windham and New London in Connecticut, and the counties of Bristol, Plymouth, and Barnstable in Massachusetts.

Richard W. Bauman has been named sales manager of the Koolfoam retail division by **Dayton Rubber Co., Dayton, O.**

Dana Corp., Toledo, O., has appointed Harry S. Clarke as assistant sales manager of the company's Railway Division.

Leslie F. Robison has been appointed vice president-sales of **Little Giant Products, Inc., Peoria, Ill.**

Whitfield Chemical Co., Detroit, has appointed James E. Dugan as a sales engineer. He will cover parts of Michigan, Ohio, and Indiana.

Ernest A. DeMetre is now a power tube application engineer in the **Tube Department, General Electric Co., Schenectady.**

Need HOSE in a *HURRY?*

Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver

Wherever your job is—*whenever* you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—*when* and *where* you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

ATLANTA 5, Ga. 477 Eighth St., N.E.
BALTIMORE 18, Md. 15 East 21st St.
BOSTON (Allis. 34), Mass. 12 Franklin St.
CHICAGO 10, Ill. 10 West Hubbard St.
CINCINNATI 2, Ohio 49 Central Ave.
CLEVELAND 15, Ohio 2731 Prospect Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.
INDIANAPOLIS 4, Ind. 309 North Capitol Ave.
MEMPHIS 3, Tenn. 268 Madison Ave.
NEW YORK 7, N. Y. 81 Murray St.
PHILADELPHIA 6, Pa. 311 North Randolph St.
ST. LOUIS 8, Mo. 4018 Olive St.
SYRACUSE 3, N. Y. 739 Montgomery St.



Continental Suction Hose is recognized nationally by contractors for its superior quality—not an ordinary hose, but a hose built for rugged, dependable service. Sizes 1½" through 12", for water and/or sand suction. Send for catalog of HOSE and PROTECTIVE CLOTHING.

HOSE by CR
CONTINENTAL

CONTINENTAL RUBBER WORKS • 1983 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For More Information Circle No. 388 on Inquiry Card—Page 17

This NEW Magnetic Counter is EASY to Reset...



Added Evidence that—

Everyone Can Count on VEEDER-ROOT

Designed for panel mounting where remote indication is required, this electrically operated counter is a compact package 5.5″ long, 2.1″ wide, 2.7″ high. Capacity: 1,000 counts per minute. Power consumption, 8 watts. Stocked in 110 and 220 AC and DC. Easy to reset, except when locked . . . then the sturdy tumbler-lock* puts the damper on tampering. Yet one turn of the key resets all 6 figures to zeros.

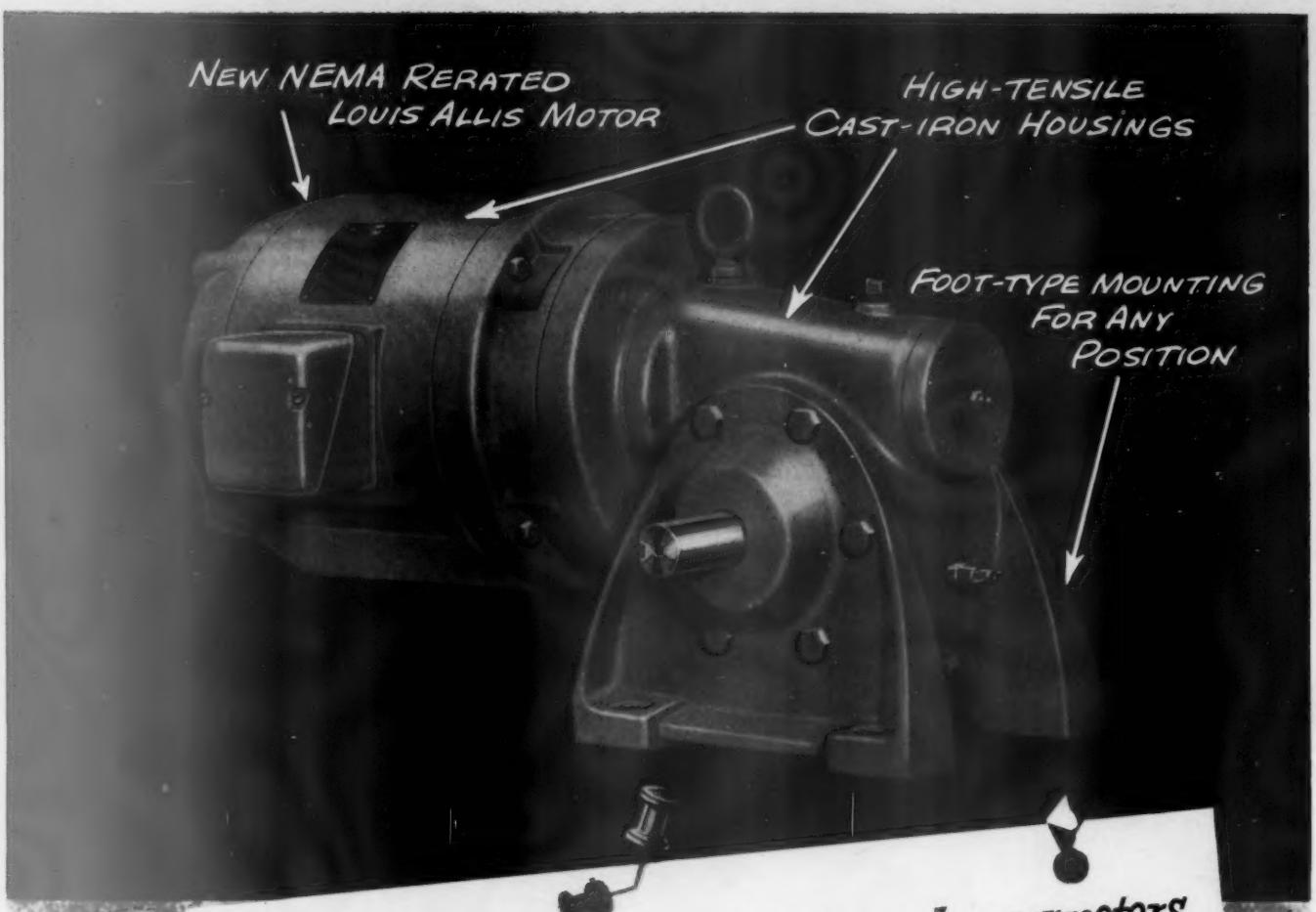
This new Magnetic Counter is one of the thousands of Veeder-Root standard and special counters . . . electrically, mechanically and manually operated . . . in daily use throughout the world in industry, business, science and medicine. You, too, can count on Veeder-Root . . . to help you count anything you need.

*National Lock Co. Lock No. 68-4837; Key D-428

Stocked at
Hartford 2, Conn. • New York 19, N. Y.
Greenville, S. C. • Chicago 6, Ill.
Montreal 2, Canada
Offices and Agents in Principal Cities

VEEDER-ROOT
"THE NAME THAT COUNTS"

For More Information Circle No. 389 on Inquiry Card—Page 17



Louis Allis announces its L.A. line of right-angle gearmotors

Now available with new NEMA rerated L.A. motors for all applications — in sizes from 1 to 30 hp

Before we go into the many design features of this compact gearmotor, let's take a look at a few other advantages:

First of all, you can get either foot- or flange-mounted units. Secondly, you can have any motor enclosure you want. And finally, you can have any electrical or mechanical modification needed for any specific application.

In other words, here's a line of gearmotors ruggedly designed, versatile and efficient—to give you a sound answer to your right-angle gearmotor drive problems. Here's why:

- Both gear and motor housings are made of high-tensile cast iron to provide maximum strength, rigidity, and compactness.
- The worm, carefully machined from hardened alloy steel, is ground to close tolerances to give greater efficiency and longer life.
- The worm gear is cut from a high grade of wear-resistant alloy bronze.
- A double-row angular contact bearing and a ball bearing provide for radial and thrust loads on the worm shaft.
- The output shaft is mounted in tapered roller bearings for maximum load-carrying capacity.
- Ample oil-bath lubrication assures longer life and minimum maintenance.
- Special oil seals on all shafts keep the oil in--dirt out and permit any mounting arrangement.

Here's a line of right-angle gearmotors that's very easy to apply. Standard speed range from 7-1/2 to 300 rpm--special speeds also are available.



Flange-mounted right-angle gearmotor with new L.A. line explosion-proof motor

GM-103

THE LOUIS ALLIS CO.
MILWAUKEE 7, WISCONSIN

For More Information Circle No. 390 on Inquiry Card—Page 17





NEW semi-continuous billet casting makes Mueller Brass Co. RED TIP ROD BETTER THAN EVER!!

Brass rod billets produced by the new semi-continuous process at the Mueller Brass Co. are vastly superior to those manufactured by conventional methods.

The close metallurgical controls made possible by this new automatic equipment improve still further the internal soundness and constant uniformity of the rod . . . a factor for which RED TIP ROD has long been famous.

It will lower production costs in automatic screw machines by permitting faster machining speeds while at the same time increasing tool life.

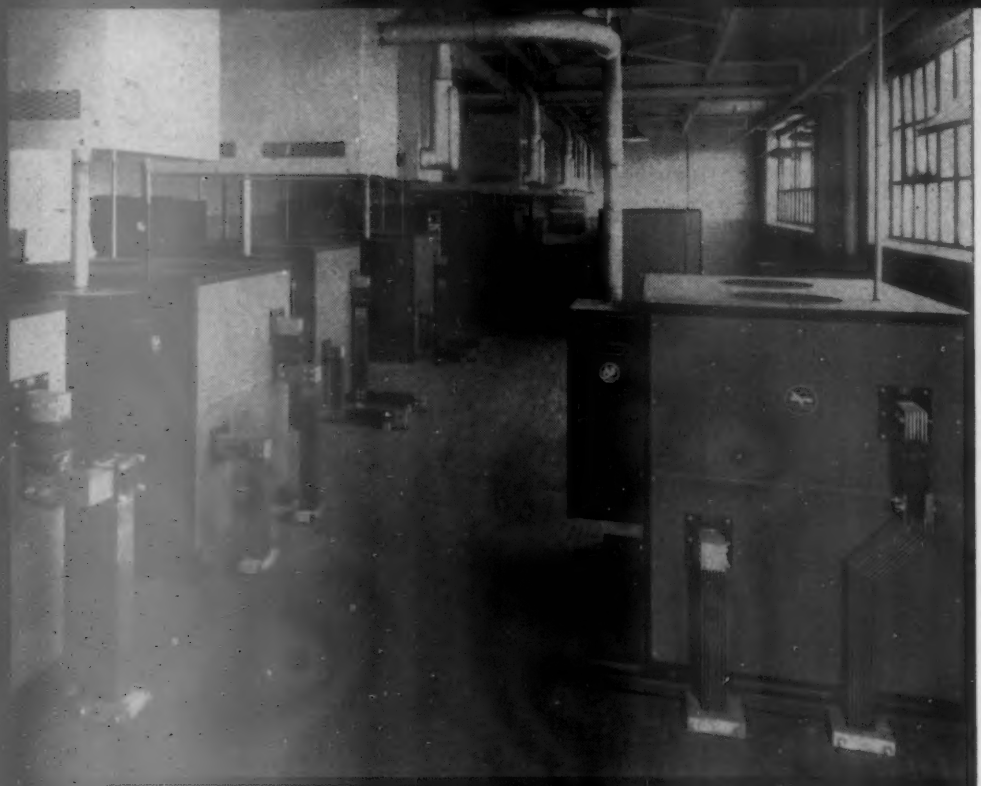
Order a supply for your next production run . . . you'll find for top quality and dependable service you just can't beat Mueller Brass Co.'s new RED TIP ROD.

For complete details on this new semi-continuous process and technical information on all copper base alloys in rod form, write today for your copy of Engineering Manual No. FM-3110.

MUELLER BRASS CO.

PORT HURON 21, MICHIGAN

177



PRODUCTION PLATING WITH UDYLITE-SELENIUM

75,000 amperes of Rectification with push-button control

In this ultra-modern automatic plating operation the rectifiers selected were Udylite Selenium—with a total output of 75,000 amperes.

30,000 amperes at 2 to 9 volts are used alone for the nickel plating operation. These selenium rectifiers are controlled automatically by a single push button control. No matter how much work is in or out of the tank, the amount of voltage is automatically adjusted to remain constant.

The chromium plating is equipped with 9 volt selenium rectifiers. Each rack of work goes into the chrome plate "live" at approximately 3 volts. When the racks arrive at the bottom of the down stroke a strike voltage of 9 to 18 volts is applied for a few seconds—then the voltage is lowered to regular plating voltage —and it's all done automatically!

Udylite has engineered hundreds of similar installations of all sizes for all kinds of metal finishing operations. Why not call on this experience for your rectifier problems—either Selenium or Germanium? Write us today.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

suppliers

William K. Underhill has been named sales manager for the Connecticut plant by **Joseph T. Ryerson & Son, Inc., Chicago.**

Pontiac Motor Division, General Motors Corp., Pontiac, Mich., has named Frank V. Bridge as general sales manager.

John P. Grady has been made assistant general sales manager of the **Chase Bag Co., Chicago.** Tom A. Eadon, Jr., has been named sales manager of Chase's Philadelphia branch.



C. H. Abbott



A. M. Blakesley

Atlas Plywood Corp., Boston, has named two new sales managers. Charles H. Abbott is sales manager of the Door and Panel Division. Alfred M. Blakesley is sales manager of the Container Division.

Petz-Emery, Inc., Pleasant Valley, N. Y., has appointed the following district representatives: DuPage Gage, Inc., Downers Grove, Ill.; Hoffman-Baumrack Co., Philadelphia; James O. Horne, Rochester; Manufacturers Sales Co., Detroit and Grand Rapids; C. D. Proctor Co., Waterbury; and Sterling Sales, Inc., Worcester, Mass.

William C. Otto has been appointed industrial sales manager of the Indianapolis Division of **Cornell-Dubilier Electric Corp., South Plainfield, N. J.**

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←on Inquiry Card—Page 17

For More Information Circle No. 394
on Inquiry Card—Page 17→



Universal pipe and block insulation for all temperatures from 100° to 1600° F.

Now, solve *all* your insulation problems with *one* pipe and block insulation . . . Carey Alltemp. Alltemp retains its high thermal efficiency and structural strength under continuous exposure to high heat and moisture. Extremely low shrinkage. Water absorption half of other molded materials. Easy to shape or work to fit any installation . . . excellent workability. Carey Alltemp won't crack or crumble under severe service conditions . . . and it's economical to install. Simplifies specification, purchasing, stockkeeping and installation.

Choose from the complete line of Carey Industrial Products

• Flat and Corrugated Asbestos-Cement Boards • Asbestos Gasket Stock • Asbestos Fiber and Specialties • Asbestos Paper • Asbestos Millboard • Asphalt Paints, Coatings and Emulsions • Asphalt Plank and Tile • Asphalt Plyboard • Super-Light 85% Magnesia Pipe and Block Insulation • Hi-Temp 19 Block.

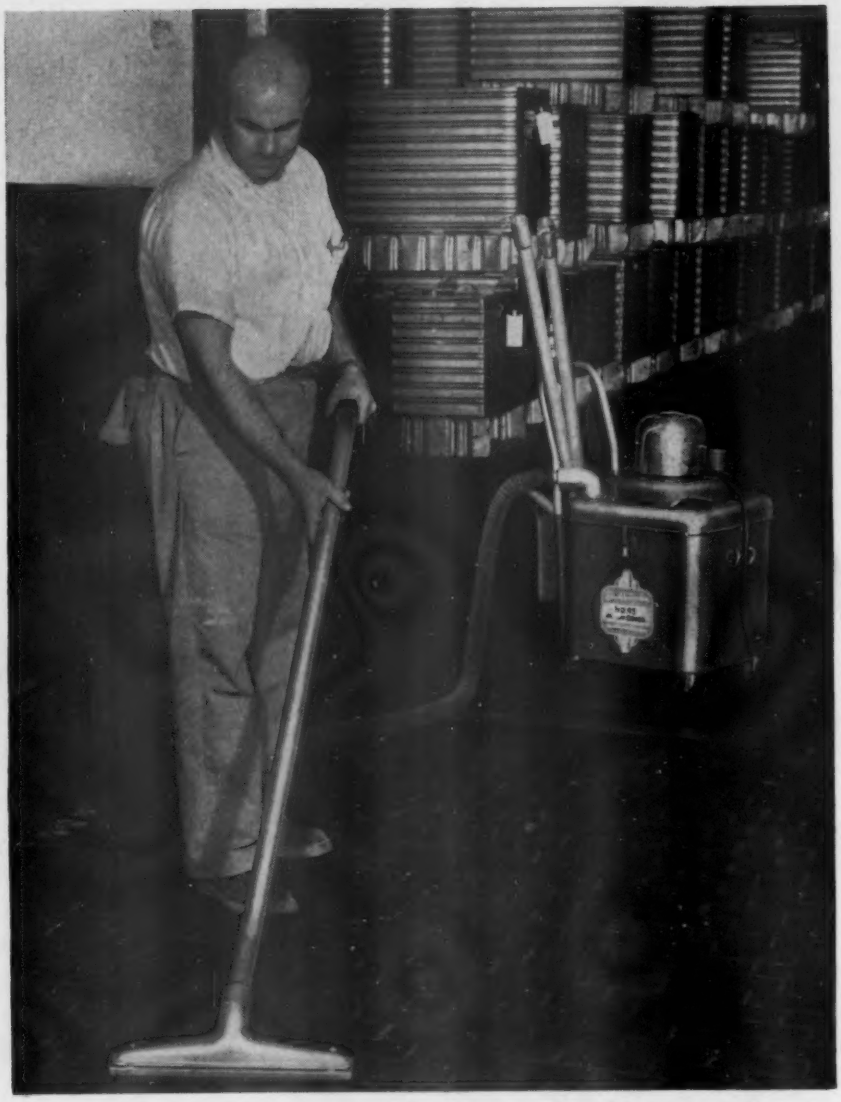
Ask your Carey Representative for a file copy of the ALLTEMP SPECIFICATION FOLDER, contact your nearest Carey District Office or write Dept. PU-4 at the Carey General Offices in Cincinnati.

THE PHILIP Carey MFG. COMPANY

Lockland, Cincinnati 15, Ohio
In Canada: The Philip Carey Company, Ltd., 277 Duke Street, Montreal 3, P. Q.

CAREY DISTRICT OFFICES: Atlanta, Ga. • Cambridge, Mass. • Charlotte, N. C. • Chicago (Bellwood), Ill. • Cincinnati, O. • Cleveland, O. • Detroit, Mich. • Houston, Texas • Los Angeles, Calif. • New York, N. Y. • Philadelphia, Pa. • Pittsburgh, Pa. • St. Louis, Mo. • San Francisco, Calif. • Seattle, Wash.

Black & Decker® "95" VACUUM CLEANER IS POWER-BUILT for all-purpose cleaning!



Compactness, versatility and power make the B&D #95 Vacuum Cleaner the finest heavy-duty, all-purpose cleaner for wet or dry industrial use.

The self-contained B&D #95 Vacuum Cleaner rolls easily over rough floors on casters. An extra flexible 15-foot hose reaches out-of-the way spots. You can quickly and easily empty the unit's dirt compartment.

Also available for lighter use, the B&D #65 Vacuum Cleaner delivers 70% - 100% more cleaning power than any comparable unit. A handy Accessory Carrier saves time and steps. For more details on B&D Vacuum Cleaners, see your B&D distributor or write: THE BLACK & DECKER MFG. Co., Dept. 1704, Towson 4, Md.



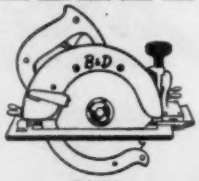
We don't buy motors — we build them!

The *heart* of your electric tool is the motor — completely built by Black & Decker! All the power you need *and then some* — because each motor is built for a specific tool and the job it must do! B&D motors always *stand up!*

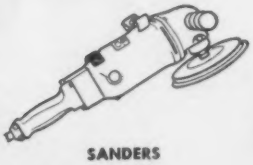
LOOK IN THE YELLOW PAGES UNDER "TOOLS-ELECTRIC"

B&D Black & Decker®
PORTABLE ELECTRIC TOOLS

SERVICE! ... one of 43 Black & Decker factory service branches is located "next door" to you to give fast, efficient service and genuine replacement parts.



SAWS
5 models



SANDERS
6 models



SCREW DRIVERS
21 models



PORTABLE GRINDERS
6 models

For More Information Circle No. 395 on Inquiry Card—Page 17

DoALL END MILLS
High Speed Steel



Choose From Over 250 Different End Mills In Local Stocks

- Provides maximum strength on cutting edge
- Removes feather edge
- Prevents "heeling" action
- Allows maximum speeds and feeds
- Eliminates breakage

- Taps
- Reamers
- Tool Bits
- Twist Drills
- Countersinks
- Milling Cutters
- Carbides

Many "Specials" At Standard Prices . . .
Immediate Delivery

High speed steel end mills featuring a double back-off design are available from local DoALL stock in *over 250 different combinations of size and type!*

For instance, the following end mills which are premium price specials at many places, are standard at DoALL:

Long 2 flute single end; double ball end; shank type dovetail cutters; 2" dia., 2 shank—3, 4, or 6 flutes; straight shank T-slot cutters; left hand spiral, right hand cut; stub flute.

All DoALL end mills are completely finish ground after hardening, have a high helix angle which promotes smoother cutting, and have hollow ground spiral flutes for better chip removal and less abrasive action.

. . . And, when you need a special end mill not carried in stock, you'll find DoALL has the fastest delivery! Call your local DoALL Sales-Service Store today, or write:

The DoALL Company, Des Plaines, Illinois

All types of high speed steel end mills and cutting tools stocked locally.

FREE CATALOG B4a — lists complete line of H.S. Steel end mills with complete specifications and prices. Write for it today!

CT-19



FRIENDLY DoALL STORES IN 38 CITIES give you personalized service and local delivery from complete stocks

For More Information Circle No. 396 on Inquiry Card—Page 17

CALL ON

Campbell

For the Right Sling Chain For Any Job!

Guaranteed for a Full Year

No matter what your requirements are for Sling Chains, you're sure to find what you need in Campbell's complete line—Cam-Alloy, High Test Steel, or Wrought Iron. And with each Sling Chain you'll enjoy the protection of Campbell's "Guarantee and Certificate of Test."

Every Campbell Sling (including attachments) is proof-tested at the factory to a load in excess of the working load limit and carefully inspected, link-by-link, before shipment.



An identification ring is attached to the master coupling of each Sling Chain with grade, type, reach and register number indicated.

Get complete information on the wide variety of Campbell Sling Chains. Write for your copy of the new Campbell Sling Chain Catalog. It contains specifications, working load limits, and helpful suggestions for use in ordering Campbell Sling Chains.



CAMPBELL CHAIN

CAMPBELL CHAIN Company

YORK, PA.

West Burlington, Iowa • Portland, Oregon • Sacramento, Calif.

Maker of the famous *Lug-Reinforced* Tire Chains

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BOOK REVIEWS

Government Statistics for Business Use

Edited by Philip M. Hauser and William R. Leonard

John Wiley & Sons, Inc. $8.50

Intelligent purchasing demands a knowledge of business and economic trends. Government statistics are invaluable as tools for business forecasting. In addition, they are useful for comparison with internal indexes of prices, etc. *Government Statistics for Business Use* can be useful reference for the PA who either doubles as company economist or who endeavors to forecast price trends in particular commodities. The book deals with such important fields of economic statistics as national income, industry, agriculture, population, prices, transport, etc.

Materials Handbook

by George S. Brady

McGraw-Hill Book Co. $11.00

The author of *Materials Handbook* is well known to purchasing because of his work for many years for the N. A. P. A. This book gives practical data on more than 10,000 materials — metals, alloys, refractories, abrasives, woods, and many others. It concentrates on supplying the most useful and essential facts for purchasing agents rather than giving an exhaustive treatise on each material. This is the Eighth Edition of the book. It includes the newer heat-resistant materials and other late developments. In Part II, an economic section presents basic information on the economic geography of materials resources, weights, measurements, physical comparisons, etc. This enables the purchasing agent not only to see the administrative "how" of buying materials but also to understand the "why" in fundamental, clear terms.

FOR MORE INFORMATION ON PRODUCTS IN THIS ISSUE PLEASE USE INQUIRY CARD — PAGE 17



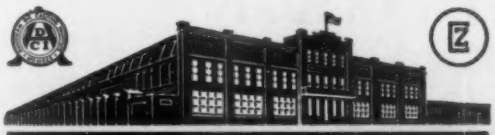
New IBM Electric Typewriter *dressed up in Die Castings by* MT. VERNON

CASE HISTORIES FROM MT. VERNON FILES

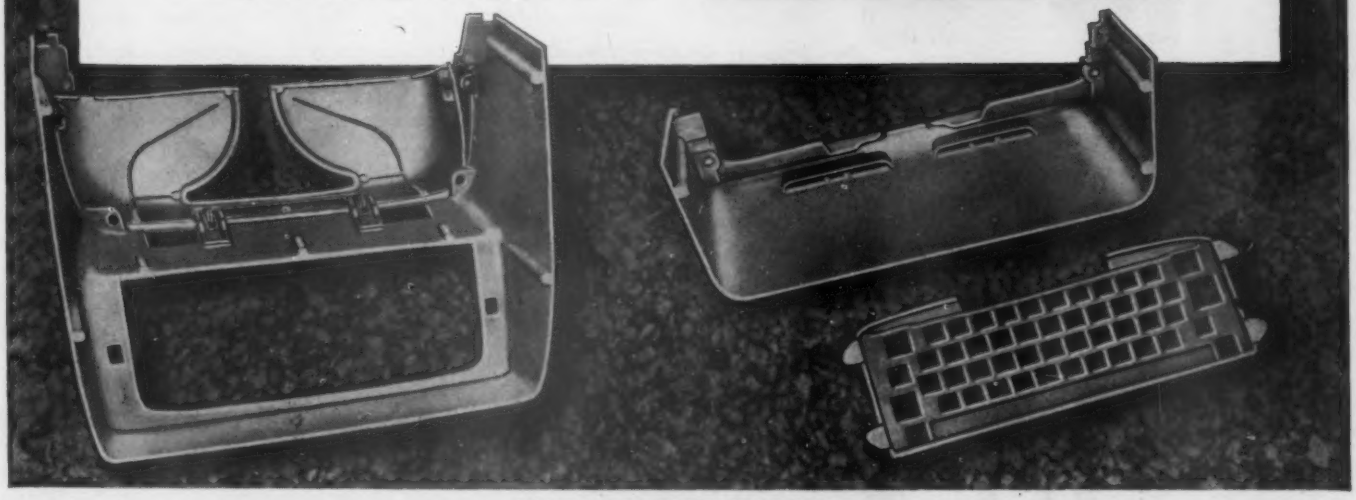
"New from carriage to keyboard, and years ahead in results, performance, design," is how IBM describes its new electric typewriter. And as with any leader in manufacturing, "new in design" at IBM means best in manufacturing methods. That's why this electric marvel is housed in die castings. Note how only four strong, thin-walled, large aluminum sections are used to completely enclose the complex machinery in a handsome example of modern styling. Note particularly the accurately-fitting sections and keyboard, and gracefully-rounded contours, always a delight to the eye, but often a manufacturing headache.

Not so, however when you use Mt. Vernon die casting — the modern, high-speed, low cost production method that produces the most intricate parts, frequently so flawlessly perfect that only a final painting step is required before assembly. Best of all is the complete service available from Mt. Vernon's coordinated designing, die-making, casting, and machining facilities, all under one roof, which can supply die cast zinc and aluminum parts ready for use; reducing need for machining and finishing.

A switch to die casting or to a complete die casting service like ours, may be your next step. Let's discuss it.



MT. VERNON
DIE CASTING CORP.
STAMFORD, CONNECTICUT



SALES REPRESENTATIVES

Mr. Grant Eller
6 East 194th St., Cleveland, Ohio

Mr. David King
230 Grant Boulevard, Syracuse, N. Y.

Mr. William Sauers
101 Briarcliff Road, Rochester, N. Y.

Mr. Arthur Diamond, Tools Incorporated
86 Bethlehem Pike, Philadelphia, Pa.

Mr. Jerome J. Theobald
9 East Genesee St., Skaneateles, N. Y.

Mr. George E. Hahl
39 South Munn Ave., East Orange, N. J.

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Emergency cutout switch breaks all electrical contacts in system.



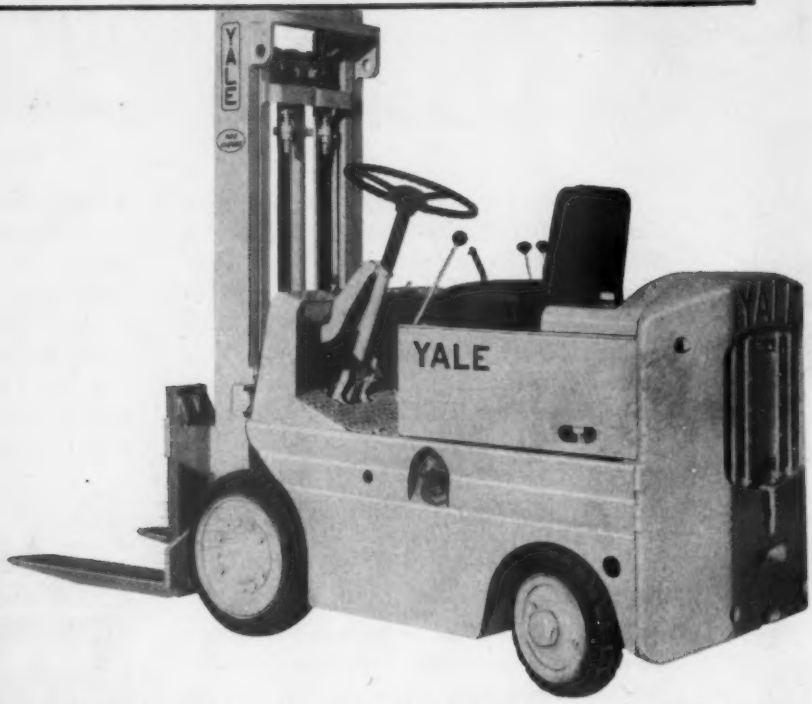
Fuel system designed to eliminate syphoning.



Generator and starting motor are totally enclosed.

The only Gas Truck safe enough to get GS Approval!

YALE KG51 SERIES



POSITIVE EXHAUST CONTROL



Flame suppressor (top) and cyclone muffler (bottom) prevent emission of hazardous sparks and flames.



The Yale KG51 Series Gas Truck is the only truck of its type that is GS Approved by Underwriters' Laboratories (U.L. File No. AU-1572). It satisfies all the requirements of the National Fire Protective Association for safe use where combustible fibers or containers of hazardous liquids or gases are being handled in storage. Incorporated into the design are all of the safety features required by Underwriters' Laboratories GS specifications, including those shown at left.

Immediate availability! Yale KG51 Series Gas Trucks—with GS Approval and all the famous Yale engineering features that make Yale trucks the smoothest handling lift trucks ever built—are immediately available in capacities of 3,000 to 10,000 pounds. Send for full facts today about engineering details on Yale Gas Trucks with GS Approval. Write : The Yale & Towne Manufacturing Company, Philadelphia 15, Pa., Dept. 254.

YALE*

*REG. U. S. PAT. OFF.

INDUSTRIAL LIFT TRUCKS AND HOISTS

Gas, Electric, Diesel, LP-Gas Industrial Lift Trucks • Worksavers • Warehousers • Hand Trucks • Hand and Electric Hoists

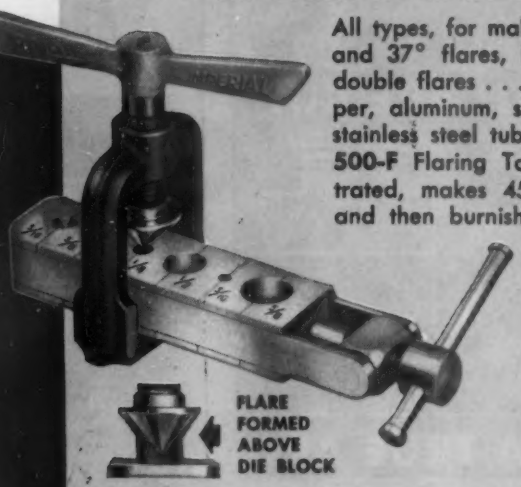
For More Information Circle No 399 on Inquiry Card—Page 17

Avoid Lost Time and Grief by replacing labor-wasting tools with modern efficient

IMPERIAL TUBING TOOLS

IMPERIAL FLARING TOOLS

All types, for making 45° and 37° flares, including double flares . . . on copper, aluminum, steel and stainless steel tubing. **No. 500-F** Flaring Tool, illustrated, makes 45° flares and then burnishes them.



IMPERIAL HI-DUTY TUBE CUTTER

Free wheeling ball bearing action. Roller type with flare cut-off groove. Retractable reamer. **No. 274-F** for ⅛" to 1" O.D. tubing. Other models for sizes up to 2¼" O.D. Also sawing vises for 3/16" to 4" tubing.



IMPERIAL TUBE BENDERS

Bend hard or soft tubing. Form neat accurate bends to short radius. Calibrated **No. 364-FH** individual benders for each size of tubing. Also gear type benders, spring type benders and benders for combinations of sizes. Size range ⅛" to 1⅛" O.D.



Take advantage of the many far-reaching advances in tubing tool design by Imperial. They have obsoleted many time-honored tools that were considered good in their day . . . tools that now may be wasting many valuable man hours! Replace them with Imperial.

Remember, one bad flare—or one poor bend—may cost you far more than a whole kit of tools.

No matter what the tubing . . . copper, aluminum, steel or stainless steel . . . depend on Imperial for tubing tools that will help you get every job done right the first time. They're recognized as the leaders in the field by mechanics everywhere.

IMPERIAL *Offers Industry's Most Complete Line of Tubing Tools for*

FLARING	BENDING	CUTTING	SWAGING	REAMING PINCH-OFF REFACING Also Test Plugs
45° Flares 37° Flares Double Flares	Lever Type Gear Type Spring Type	Tube Cutters Sawing Vises	Hammer or Impact Type Screw Type	

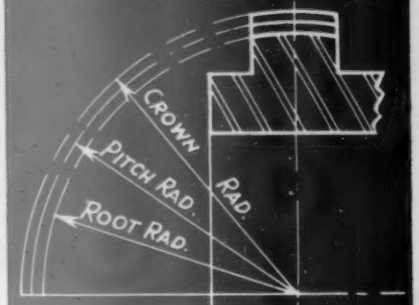
Ask for Catalog No. 3011 • See your Industrial Distributor

THE IMPERIAL BRASS MFG. CO., 512 S. Racine Ave., Chicago 7, Ill. *In Canada: 334 Lauder Ave., Toronto, Ont.*

IMPERIAL *Emblem of Quality*

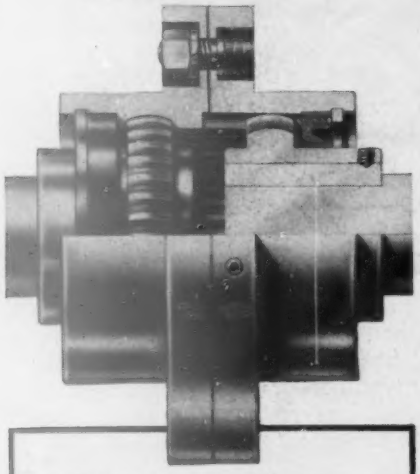
Industry's Most Complete Line of Tube Fittings and Tubing Tools

Here's the Big
DIFFERENCE
TEETH ARE CUT



ON A TRUE ARC

SPHEREFLEX®
COUPLING



SPHEREFLEX tooth design features an exclusive curved root and spherical tooth flank. Both angular and linear (parallel) misalignment are compensated for, since every portion of each gear tooth is actually a segment of a sphere. This special design eliminctes all possibility of tooth interference and permits increased deflection between mating members. Full and uniform line contact, through the working depth of the tooth, insures a stronger coupling between driver and driven shafts; eliminates point rolling contact between gears during flexing; compensates for shaft misalignment up to 14° included angle.

PHILADELPHIA
GEAR WORKS
INCORPORATED
ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON • LYNCHBURG, VA.
BALTIMORE • CLEVELAND
Industrial Gears & Speed Reducers • Limitorque Valve Controls
Established 1892

For More Information Circle No. 401
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Well-Stocked Inventories Permits Shipment From Stock To Meet Demand



You can't sell apples from an empty barrel!

Although we don't sell apples, we do manufacture high quality tube and hose fittings. We manufacture approximately 1000 stock, price list items, using about 50 automatic screw machines in the process. Currently, all 1000 items are available from factory inventory for immediate shipment to distributors and customers. But this was not always the case.

During the years of war and near war, we established a rigid manufacturing pattern, and with it a stock turn rate, which was felt to be desirable and justified.

Our original program was expected to accomplish two things: (a) reduce total set-up time, thus allowing a higher production rate, and (b) permit production of individual items in the most economical lot quantities.

We asked our distributors, in turn, to keep their own stocks up and to allow sufficient lead time in placing orders to enable the factory to hold to prearranged, fairly rigid manufacturing schedules. A fixed timetable by months was published showing exactly when each of our 1000 items should be ordered and when actual delivery of the order could be expected. Lead time for distributor ordering was figured at 60 days.

The distributors, it turned out, were unable to forecast accurately their requirements so far in advance. Little by little, the rush of off-schedule orders forced a wedge into our planned production program. Our manufacturing pattern left little in the way of facilities or time available for running special orders. In addition, the items originally programmed for manufacture in a particular month had to be produced during the time allotted. Delaying them until the following month simply served to increase the log jam later.

A vigorous and determined effort was made to enforce the previously published distributor ordering timetable. As the situation tightened it became increasingly evident that we simply could not afford to continue a method that jeopardized our ability to satisfy customer needs.

It wasn't very long before we found ourselves running almost on a "demand" or "out-of-stock" basis.

Experience had shown that in cases where we had even a few months supply of a particular item on our shelves, any rush orders for that item were filled swiftly and easily directly from stock with no disruption in regular production schedules. Because the inventory method worked so well in these instances, it seemed logical that it would be equally effective if applied to our entire line. We decided to give it a try.

Our finished goods inventory has been increased from $550,000 in July of 1953, to $1,600,000 today. Although this has required an expansion of our warehouse facilities and caused a substantial increase in the capital investment in finished goods, inventories have proven a definite

(*Please turn to page* 324)

Here's What We're Doing in FABRICATION



What are You Doing?



Let's Get Together!

Regardless of the type of product you manufacture—if it is made from tubing and requires fabrication—Wolverine Tube can help you do a better job.

Wolverine's fabrication equipment is complete and is backed by nearly four decades of metalworking experience. Supposing, for example, that your product requires a partially or completely closed tubular part. You'll find the right answer to this one in Wolverine's unique Spun End Process*.

Spinning the ends of the tube in special dies, Wolverine, in one easy operation, imparts a wide variety of contours with fully or partially closed end treatments.

Then, too, there are many other Wolverine fabrication techniques; spinning, finning, bending, coiling, flaring, expanding, beading, drilling, piercing. Specify the one that fits your needs. In each case, you'll find that Wolverine Tubemanship—the combination of rigid quality control, years of experience, constant research and sound engineering—is your assurance of quality and satisfaction designed to meet your most exacting requirements.

Wolverine is also a leading supplier of both finned and prime surface tubing. Its products and services are available in copper, aluminum and their alloys. Your Wolverine salesman is as near as your telephone, ready at all times to help you with tubular problems and applications. Write, too, for your copy of Wolverine's Fabricated Parts Catalog.

Wolverine Tube, 1427 Central Ave., Detroit 9, Mich.

*A PATENTED PROCESS RE. 22465

DIVISIONS OF CALUMET & HECLA, INC.

CALUMET DIVISION
WOLVERINE TUBE DIVISION
CANADA VULCANIZER & EQUIPMENT CO. LTD.
FOREST INDUSTRIES DIVISION
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WOLVERINE TUBE

Division of Calumet & Hecla, Inc.

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EXPORT DEPARTMENT, 13 EAST 40TH STREET, NEW YORK 16, NEW YORK

5119

For More Information Circle No. 402 on Inquiry Card—Page 17

W&B

CARBIDE DRILLS and REAMERS

★ LONGER LIFE
★ FASTER CUTTING
★ FINER FINISHES
★ MAXIMUM PRODUCTION
★ MORE HOLES PER GRIND
★ LOWER COST PER HOLE

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Your W & B Distributor can give you immediate delivery on all types of carbide drills and reamers. For more information on the complete Whitman & Barnes' line, write today for Catalog 106!

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WHITMAN & BARNES

DRILLS, REAMERS, COUNTERBORES, COUNTER SINKS, TOOL BITS, CARBIDE TOOLS, SPECIAL TOOLS

40015 PLYMOUTH ROAD • PLYMOUTH, MICHIGAN

NEW YORK • CHICAGO • LOS ANGELES

For More Information Circle No. 403 on Inquiry Card—Page 17

news

(*Continued from page* 322)

answer to our previous manufacturing and distribution problems.

Today, a firm and economical manufacturing schedule is being followed in our plant, and we have the merchandise the customer wants when he wants it! Any of our 1000 items can be shipped at once directly from stock to satisfy customer demand.

Formerly we viewed our production backlog rather lovingly as a form of job security, but now any backlog of unfilled orders from customers is looked upon as an outright mistake in planning and something to be corrected immediately.

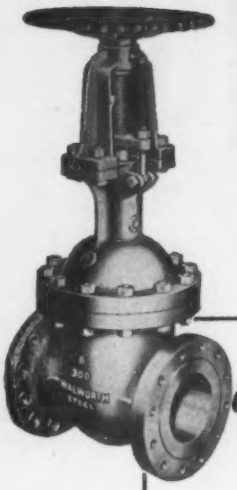
We are investing a lot of money in our inventories, but like the push cart apple peddler, we have found we can't sell effectively without them!

Plastic Pipe Handles Most Corrosives



Rigid, unplasticized PVC (polivinyl chloride) pipe is being marketed by the Alloy Tube Div., The Carpenter Steel Co., Union, N.J. It is offered in two types: (1) a normal impact grade with high chemical resistance; (2) a high impact grade with slightly less chemical resistance. Threaded and socket types of fittings are available. Both types of PVC are easily fabricated on standard metal and woodworking equipment. They can be formed, sawed, threaded, machined, hot gas welded and solvent cemented. The materials are only one-sixth the weight of steel. Friction loss is half that of steel.

PLEASE USE INQUIRY CARD PAGE 17

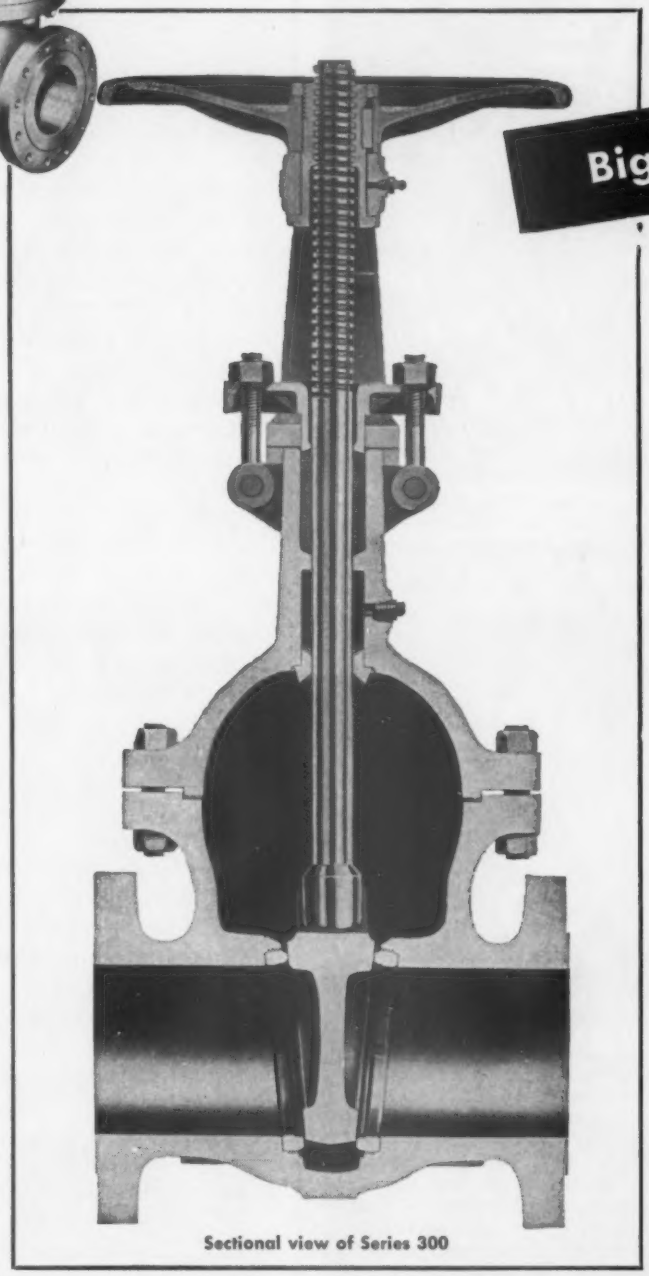


WALWORTH

Cast Steel Gate Valves

Series 150 and 300

Wedge Gate — Outside Screw and Yoke



Sectional view of Series 300

Big 8-Point Superiority!

Gland clearances are such that stem cannot be scored if gland should be tightened unevenly.

Deep Stuffing Boxes in all sizes (2″ to 24″) insure tightness and maximum packing life – costly leaks are eliminated.

Bonnets and Bodies are engineered to withstand pressure and minimize distortion – they're tough, durable, dependable.

Heavy Steel Walls provide extra strength and longer life.

Integral Body Guide Rib Faces are machined to insure accurate disc seating.

Seat Rings are bottom seated – not flange type. No recess exists at back of ring – hence no turbulence, erosion, or pressure drop.

Streamlined Ports allow high velocity, non-turbulent flow, and reduce the possibility of erosion.

Valves regularly have flanged ends. They can be supplied with ends for butt welding. Roller bearing yokes are available. On valves 5 inches and larger, by-passes can be furnished.

For Series 600 and higher, we recommend Walworth Pressure-Seal Steel Gate Valves.

For further information on Walworth Cast Steel Gate Valves, see your local Walworth distributor, or write:

WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

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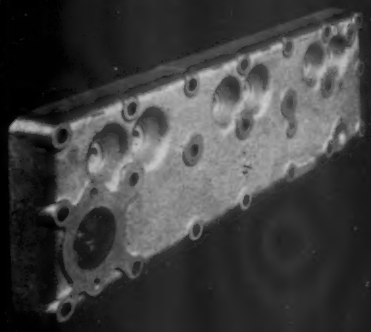
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ALL-NYLON FASTENINGS
IN STOCK
ANTI-CORROSIVE METAL PRODUCTS
FAST SERVICE ON SPECIALS
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Anti-Corrosive Metal Products Co., Inc.
CASTLETON-ON-HUDSON, N. Y.

For More Information Circle No. 405 on Inquiry Card—Page 17

Promet Engineered Bronze
BEARINGS-BUSHINGS WEARING PARTS
Guarantee Superior Service or Money Back!
SEND PRINTS, condition of operation and data for recommendations and quotations. No obligations.
Send for free literature and service data sheets
THE American Crucible PRODUCTS CO.
"Bearing Specialists Since 1919"
1319 Oberlin Avenue Lorain, Ohio, U.S.A.

For More Information Circle No. 406 on Inquiry Card—Page 17

BORES MOTOR BLOCKS 22% FASTER—AND WITH 28% LESS TOOL WEAR



...thanks to FERROCARBO®
Users everywhere report similar experiences. In fact, on 67 machining tests in 11 large machine shops, castings of gray iron treated with FERROCARBO averaged 89.5% greater machinability per tool than untreated castings. These premium castings are finer-grained, denser, stronger, yet they COST YOU NO MORE... because your foundryman, using FERROCARBO, makes worthwhile savings in raw material costs.
FOR FREE BOOKLET on FERROCARBO, citing actual case histories of faster machining, with longer tool life, write The Carborundum Company, Dept. 34, Niagara Falls, N.Y. 84-54
CARBORUNDUM®

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news

AMA Report Shows Top Executives' Salaries Lag

Top corporate executives last year failed to get salary raises proportionate to those that they gave their hourly workers. This is indicated by a survey by the American Management Association.

Compensation paid to more than 25,000 high-ranking executives in more than 3,000 American and Canadian companies during the 1954-55 fiscal year increased by only 1.8 per cent, on the average. This percentage refers to total compensation, which includes salaries, bonuses, and company contributions to retirement funds.

On the other hand, for a comparable period (that between June 30, 1954 and June 30, 1955) hourly rates paid to workers in manufactoring industries increased by 5 per cent, according to Bureau of Labor Statistics figures. The latter percentage includes only wages, not fringe benefits.

The results of the new survey, like those of the five previous studies, indicate that the fortunes of executive personnel are more directly tied to economic trends than are those of any other segment of the population, according to Dean H. Rosensteel, director of the A.M.A. Executive Compensation Service. The relationship is particularly close in the case of bonus payments.

For the period covered by the survey, the early part of which reflected the post-Korean adjustment, most of the companies surveyed reported nominal increases in after-tax earnings as a result of lower corporate income taxes and the elimination of the excess profits tax. Formal salaries paid to officers and directors increased 2.7 per cent, but this increase was

(*Please turn to page* 328)

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Only PLUMB Permabond®



Keeps Sledge Handles *Tight* Permanently

Permabond is a red-colored chemical weld used in Plumb Tool eyes to join heads and handles together permanently. Permabond eliminates mechanical wedges which weaken handles and provides a moisture-proof seal which prevents handle shrinkage. Thus Permabond minimizes handle breakage and eliminates the danger and annoyance of handle loosening, in normal use.

All Plumb Sledges are forged from high carbon steel. Faces are scientifically hardened and tempered to provide maximum serviceability. The eyes are accurately centered to assure proper balance. Select quality hickory handles are factory fitted and correctly aligned to assure a true blow with maximum striking power.

Plumb Sledges are furnished in the distinctive, nationally advertised and recognized Plumb Finish—Black Non-Rusting Head and high gloss Red lacquered Handle.

Look for *Permabond*®
An exclusive Plumb Safety-plus Feature

Advantages of Permabond® Assembly

- **Seals moisture out—eliminates shrink and swell of wood.**
- **Wood fibers remain intact with full natural strength. No wedges to cause fiber shear which weakens handle.**

All Plumb Sledges are assembled with *Permabond*®



NEVADA DRILL SERIES "A"



OREGON DRILL SERIES "B"



DOUBLE FACE BLACKSMITH SERIES "H"

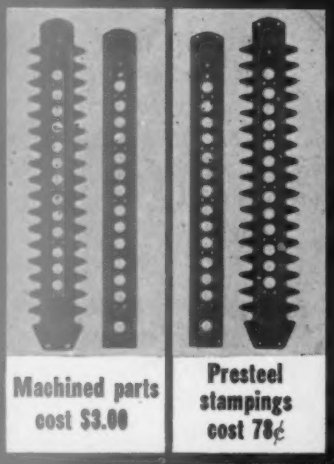


SINGLE FACE SPALLING SERIES "C"

OVER A CENTURY OF QUALITY — SINCE 1856

FAYETTE R. PLUMB, INC. · PHILADELPHIA 37, PA.

BAM!



COSTS CUT 74% IN 1 STROKE!

Porter-Cable Machine Co. of Syracuse came to Presteel with a pressing problem: their hedge trimmer cutter bar and cover were too expensive with grooves. Cut from flat stock by extensive machining, they cost $3.00 per pair. **Could costs be cut** by stamping? Our design engineers, backed by 73 years of stamping experience, devised ingenious new production methods.

Instead of machining the grooves, we **coined** them in a 1500 ton hydraulic press — and solved the problem in one stroke!

The Result? Low cost, just 78c per pair for these two complex parts, a **74% reduction** in price! Accuracy, equal to that achieved by machining! Quality, identical to the machined parts! Speed, far greater than before! All in a day's work at Presteel!

Bring us your "impossible" pressing problem where cost is a big factor. Let Presteel try it on for size. The tougher the job, the better we'll like it! Mail the coupon today.

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Please ask your representative to call ☐
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news

(*Continued from page* 326)

partly offset by bonus payments that were 4.8 per cent below those of the previous year. Lower bonus payments apparently were the direct result of the trend in profits before federal income taxes. Before-tax profits declined 5.8 per cent. Sales of the companies surveyed showed an overall decrease of 2.2 per cent.

The economic trend was further reflected in the decrease in the number of executives who received increases in their salaries during the year. Only 38 per cent were paid rates higher than the previous year, as compared to 45 per cent in fiscal 1953-54. There was no change in salary rate for 50 per cent of the executive positions reported, and lower rates were paid in more than 10 per cent of the cases.

Automated Delivery of Plastic Pellets

Eastman Chemical Products, Inc., has announced a new bulk-shipment plan which delivers Tenite polyethylene directly into customers' storage bins. This new service, according to Eastman, points to savings in material handling cost for the customer, and may also reduce the amount of floor space required for storage.

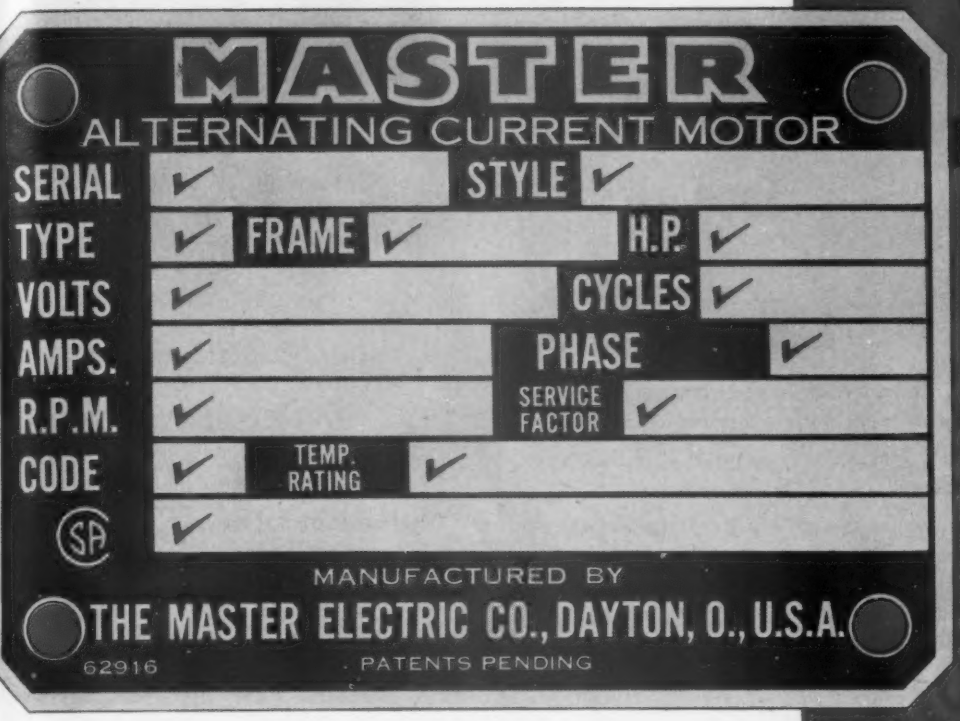
To take advantage of the bulk-shipment service, the customer needs storage bins. A capacity of 1,000 C. F. (15 tons) each is suggested. The bins may be installed in either outdoor or indoor storage areas, located so that a delivery line from the unloading area is not longer than 100 feet. The delivery line itself should be 6-inch light gauge aluminum and should have a length of flexible hose for making connections with the truck.

Tenite polyethylene pellets are

(*Please turn to page* 332)

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Write your own ticket—



What are your power drive requirements? Here at Master, with the widest selection in the nation to choose from, you're sure to fill your needs quickest and best.

Need something special in gear reduction—electric brakes—variable speed operation—fluid drive or special mounting? Or would some of our standard models (⅛ to 400 H.P.) fill the bill? You'll find the answer here! And remember, all Master components are engineered to form combinations of units in one streamlined, compact package of efficiency. Name your need and the name that fills it is Master—for greater salability of motor driven products; for increased productivity of plant equipment.

Motor Ratings..⅛ to 400 H.P. All phases, voltages and frequencies.

Motor Types.....Squirrel cage, slip ring, synchronous, repulsion-start induction, capacitor, direct current.

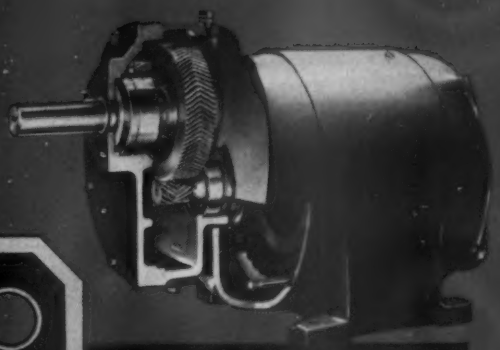
Construction ....Open, enclosed, splash-proof, fan-cooled, explosion-proof, special purpose.

Speeds .....Single speed, multi-speed, and variable speed.

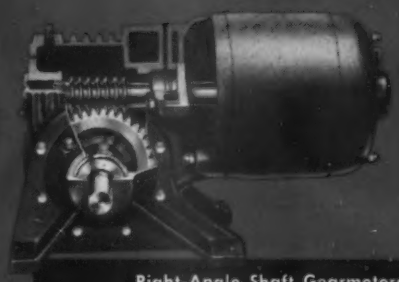
Installation .....Horizontal or vertical, with or without flanges and other features.

Power Drive Features .....Electric brakes (2 types)— 5 types of gear reduction up to 432 to 1 ratio. Mechanically and electronically-controlled variable speed units—fluid drives—every type of mounting.

THE MASTER ELECTRIC COMPANY
DAYTON 1, OHIO



Parallel Shaft Gearmotors



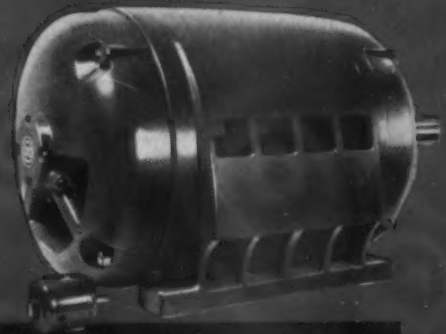
Right-Angle Shaft Gearmotors



Unibrake Motors



Speedrangers



Standard Motors— ⅛ to 400 H.P.



● Are you getting the quality of gray iron you want in your castings? You can depend on Forest City Foundries to meet your exact requirements.

Among the many tests and controls that assure the high quality of Forest City castings are the two illustrated here.

Frequent pourings of small castings known as "chill wafers", as shown above, are made to determine beyond question the quality of iron as it comes from the cupola. Each wafer then is measured for depth of white iron, and control is accomplished by variation of the amount of inoculant. The chart below shows the type of record that is kept, right at the cupola.

CHILL CONTROL SHEET

Date 8/12/53 Cupola No. 2 Taken by R. H. E.

Time	Temperature	Silicon Additions (Feeder Setting)	Chill 1/32"	Hardness Brinell Bar	Chemical Analysis Carbon	Silicon
7:15	2800	40-50	7	187	3.45	2.25
7:30	2830	40-50	11	207	3.43	2.05
7:45	2750	60-60	9			
8:00	2740	60-60	8	192		
8:15	2740	55-55	8			
8:30	2750	50-50	10	202	3.34	2.15
8:45	2750	50-50	10			
9:00	2750	50-50	12	192		



Control of chemical composition is important to assure uniformity of casting hardness and strength, but modern foundries must also control the structure of the iron as well. Here the metallurgist is examining a polished sample of iron to be sure that the structure conforms to the desired pearlite iron specification. The spectrophotometer at the technician's left is used for many accurate and rapid analyses of alloys every day.

●

To see how you can profit by having your gray iron castings made by Forest City Foundries, send us sketches, blue prints or samples for quotations.

FOREST CITY FOUNDRIES Company

CLEVELAND 13, OHIO

TELEPHONE TOWER 1-5040

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news

(*Continued from page* 328)

unloaded through the line, directly into the bins, by means of self-contained pneumatic facilities in the shipment unit. Carrying automatic handling a step further, the customer may in turn feed the pellets straight from storage bin to processing equipment either by gravity or by mechanical means.

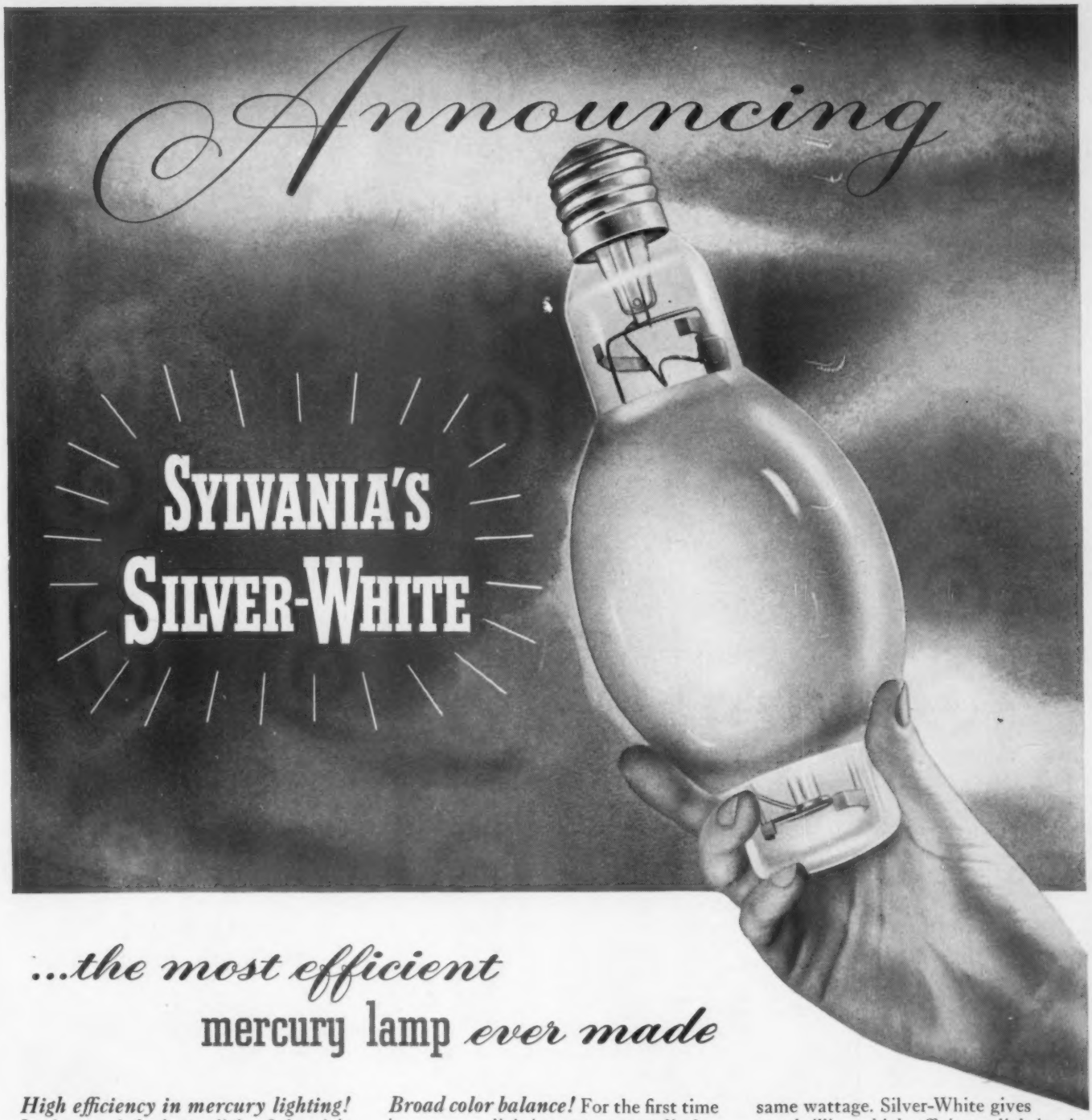
Valve For "Dead End" Service

Claimed by the manufacturer, Robertshaw-Fulton Controls Co., Box 400, Knoxville, Tenn., to fill industry's need for a tight closing valve with good modulating characteristics, a type "MA" valve is on the market. It is particularly applicable on medium and high pressure pipelines for difficult dead-end or complete shut-off service. It is designed to avoid sticking and clogging and will not develop a tendency to chatter or rattle, even on lines with pressures up to 250 psi. It is available in sizes from ¾" to 2" inclusive. The valve body is cast from bronze; poppet, seat insert, pilot poppet and pilot seat are fabricated from stainless steel and the valve end is of Monel. Sizes ¾" to 1½" have union ends; the 2" size has flanged ends.

Coding Ink to Identify Metal Parts

A new Metal Coding Ink has been specially developed for marking ferrous metals. Made to withstand temperatures as high as 1900° Fahrenheit, it permits fast, economical marking of any size or shape of metal for inspection, alloy or other types of coding. It is fast drying for non-smear and can be easily applied

(*Please turn to page* 334)



...the most efficient
mercury lamp *ever made*

High efficiency in mercury lighting! In the search for better light, Sylvania's scientists have developed new phosphors that enable the Silver-White mercury lamp to produce 10 to 20 per cent *more* light than clear mercury lamps.

The new phosphor in this bulb actually *adds* light, where previous "color improvements" subtracted from the light of the ordinary clear mercury lamp. The silver-white coating on this bulb diffuses and softens the tremendous light output. No other type of mercury lamp gives you so much light for your lighting dollar.

Broad color balance! For the first time in mercury lighting you get radiation across the whole width of the color spectrum.

Lighting costs are reduced! The 400-watt Silver-White mercury lamp gives on the average 7 times the burning hours of life as compared with incandescent of the same wattage.

Sylvania's Silver-White mercury lamps are now available in ratings of: 100-watt, 175-watt and two 400-watt types. They cost no more than other color-corrected mercury lamps of the same wattage. Silver-White gives you brilliant, high efficiency lighting in the factory, service station, parking lot, and in street and highway lighting.

A Sylvania lighting engineer would like to tell you how you can get more and better light for less money in your particular lighting installation. For technical and application data, write directly to:

SYLVANIA ELECTRIC PRODUCTS INC.
Lighting Division, Salem, Mass.

In Canada: Sylvania Electric (Canada) Ltd., University Tower Building, St. Catherine Street, Montreal, P. Q.

SYLVANIA®

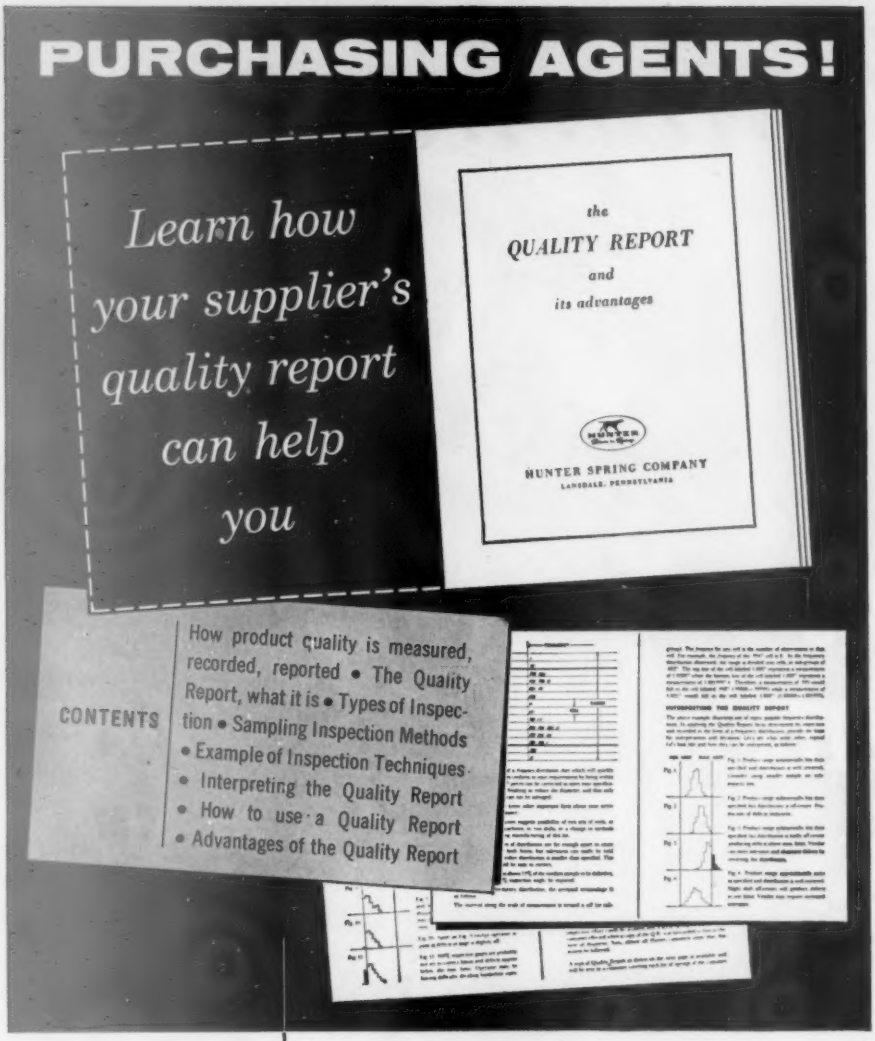
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For More Information Circle No. 414 on Inquiry Card—Page 17

PURCHASING AGENTS!

Learn how your supplier's quality report can help you



"It's great. An excellent presentation of the subject."
. . . J. R. Keough
FENWAL, INC.

"I should like to commend the authors of this booklet for having done a very fine job of presenting the subject matter in a non-technical way, and at the same time bringing out forcibly the advantages . . ."
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". . . one of the simplest yet most lucid descriptions of attribute and variable inspection that I have read."
. . . W. W. Gallagher, Jr.
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". . . very nicely done and highly informative."
. . . Edward J. Greenholt
THE BUDD COMPANY

". . . would be opportune to stimulate thought and we could use any quantity you feel could be spared . . ."
. . . H. W. Robb
GENERAL ELECTRIC CO.

Written verification of quality—that's what buyers are demanding *and getting* from their suppliers of specified components. "The Quality Report and Its Advantages"—a booklet telling how to use the supplier's Q. R.—was published by Hunter to help you avoid "Quality" headaches. It can be a real help because—

. . . it explains the "Quality Report"—the supplier's *written record* of actual test results made during product inspection.

. . . it explains how the PA can use the Q. R. to check on supplier's conformance to established specifications.

. . . it is written in non-technical, quick-reading style so busy PA's can learn more about the growing use of Quality Control techniques, test methods, and the advantages of "Quality Reporting."

This booklet will be sent free immediately on request.

Every shipment of parts supplied by Hunter automatically includes a "Q. R." on tested characteristics.

HUNTER

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15 Spring Avenue, Lansdale, Pennsylvania
(near Philadelphia)
SPRINGS • STAMPINGS • TEST APPARATUS
(pioneers in Quality Reporting)
For More Information Circle No. 415 on Inquiry Card—Page 17

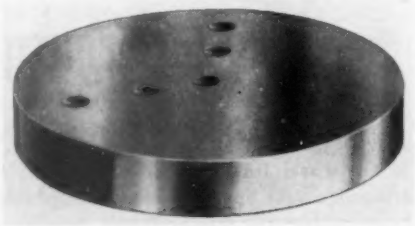
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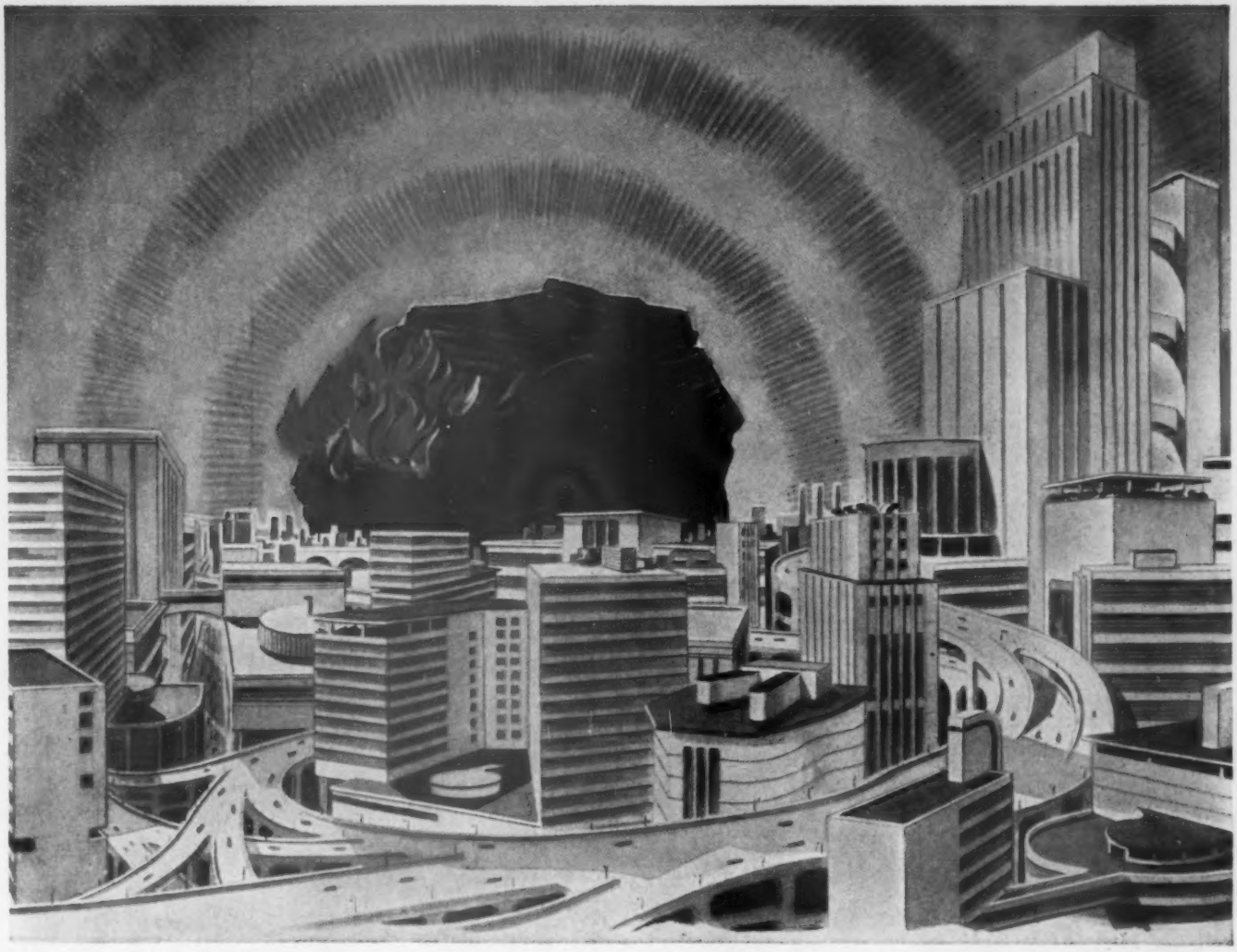
by roller coat, ordinary stamp pad or marking pen device. If applied prior to tube forming, it appears as a clear, internal impression. Colors include red, green, blue and yellow, as well as black, for application on metals with regular annealing. For bright annealing ink is furnished in black only. It is made by Ink Specialties Co., 519 North Halsted Street, Chicago 22, Illinois.

Free Machining, High Strength Steel Bar



La Salle Steel Co., Hammond, Ind., is marketing a high strength, free machining steel bar which requires no heat treating. The new product has in-the-bar properties usually associated only with heat treated steels. In addition, it has greatly improved machinability. These various properties are said to drastically cut the cost of parts. With the heat treating process eliminated, the problems usually associated with it are avoided. For example, quench

(*Please turn to page* 336)



The fuel that sparked our nation's growth secures her greater future

A young America—primed by a new and power-packed fuel—became a great industrial giant almost overnight. Coal had supplied the first unwavering spark which was to grow into the brightest productive flame the world has ever known.

After being served so well in the past and present, America looks again to dynamic coal for greater prosperity and security in the future. The vast Bituminous fields along the Baltimore & Ohio contain excellent coals in wide variety—available for centuries to come.

BITUMINOUS COALS FOR EVERY PURPOSE

Highly mechanized mines, equipped and ready for any demands, will help maintain long-range cost stability. And improved utilization methods will meet the increased requirements of the future by providing greater coal-burning efficiency.

CALL ON OUR COAL TECHNICAL SERVICE

You'll receive complete information from trained B&O experts about the kind and size of Bituminous coal that fits your needs best—at a price you want to pay. Write:

COAL TRAFFIC DEPARTMENT
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BALTIMORE 1, MARYLAND

LINKING 13 GREAT STATES WITH THE NATION — B&O

Baltimore & Ohio Railroad

Constantly *doing things* — better!

For More Information Circle No. 416 on Inquiry Card—Page 17

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SOURCE OF SUPPLY
AND
AUTHORITY
ON . . .

SILVER
BRAZING ALLOYS
AND SILVER FOR OTHER
INDUSTRIAL USES

- EASY-FLO and SIL-FOS Silver Brazing Alloys
- Other Silver Brazing Alloys conforming to Standard Specifications of Army, Navy and other Agencies
- Silver Solders for electronic uses
- HANDY FLUXES (paste and liquid)
- Silver Anodes for plating (slabs, balls, grain)
- Silver Contact Alloys
- Silver Bi-metals
- Silver Powder and Flake
- Silver Paint and Paste
- Fine Silver (wire, strip & foil)
- Silver Sintered Metals
- Solder-flushed Silver Alloys
- Special Silver Alloys to your requirements

Over half a century of silver alloy research, development and fabrication, makes Handy & Harman *the place to go* for silver brazing alloys and for other silver alloys for industrial uses. The comprehensive selection of special silver brazing alloys offered by Handy & Harman meets a wide variety of special requirements. Consult us without obligation.

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For information about the products listed or for assistance on problems involving silver in any form, write to our nearest office listed below.

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ORIGINATORS OF EASY-FLO & SIL-FOS

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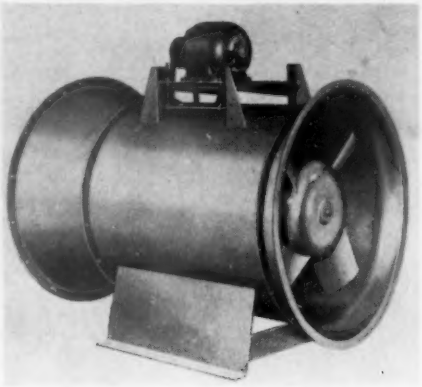
For More Information Circle No. 417 on Inquiry Card—Page 17

news·

(*Continued from page* 334)

cranks become a thing of the past; distortion from heat treating is eliminated; expensive and time consuming operations such as cleaning, straightening, inspection, etc., are unnecessary. The product machines 25% faster than annealed alloys and up to 100% faster than heat treated alloys.

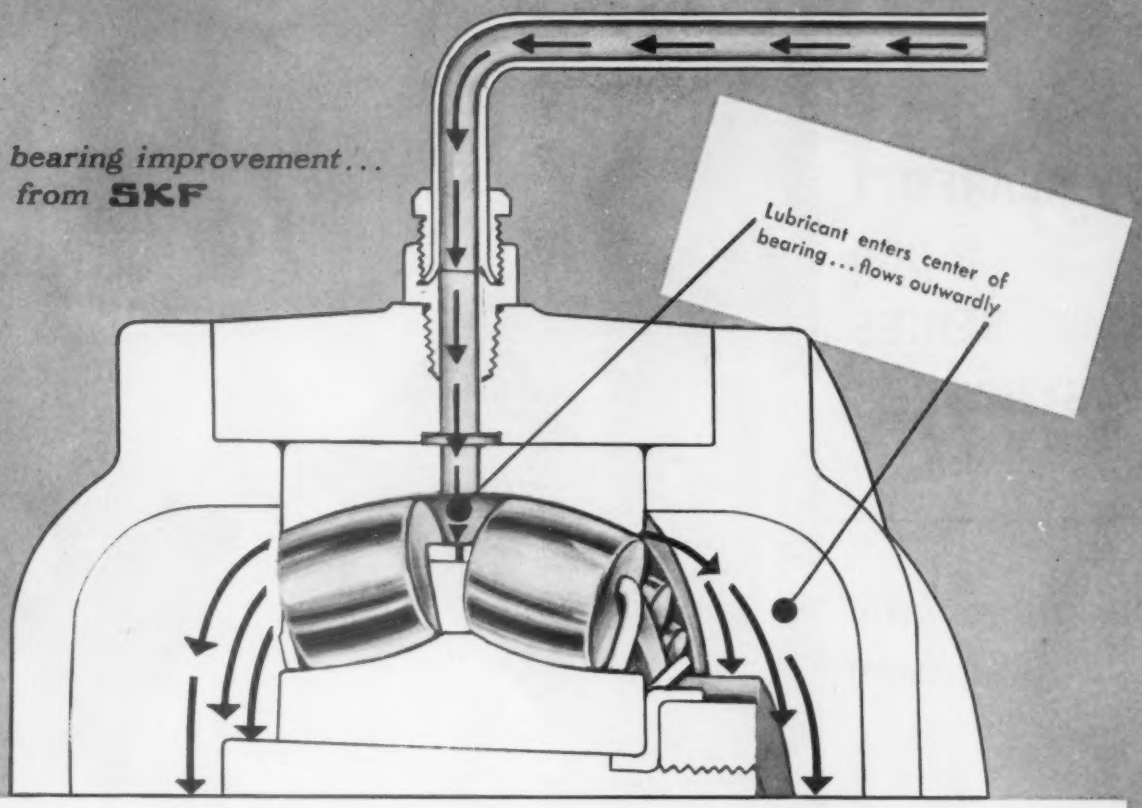
Axial Fans For Industrial Ventilation



American Blower Corp., Detroit 32, Mich., has on the market a line of axial fans featuring universal mounting, straight-line air flow and low installation costs. They were developed for use in industrial ventilation, process air supply and process air circulation. The fans have cylindrical casings, allowing installation in ducts requiring a minimum of space. In most cases, the axial fan requires less space than a centrifugal fan of equivalent capacity. The fans are available in 12 sizes, the tube-axial types with deliveries to 68,000 cfm and the vaneaxial with deliveries to 58,500 cfm.

FOR MORE INFORMATION ON PRODUCTS IN THIS ISSUE PLEASE USE INQUIRY CARD—PAGE 17

Another bearing improvement... from **SKF**



NOW AT NO EXTRA CHARGE-

SKF's improved method of lubricating large spherical roller bearings

To make the lubricant effective it should be located where needed—in the bearing. Also, new lubricant, when added, should enter where it does the most good—in the bearing.

For these reasons, all future production of SKF double row spherical roller bearings above 240 mm O.D. (9.4488") will be made with three equally spaced drilled holes in the center of the outer ring without any extra charge to our customers. *This permits the lubricant to enter the center of the bearing.*

With the lubricant (either grease or oil) being introduced into the center of the bearing, all working surfaces are quickly and completely covered. In addition, the outward flow flushes out the old lubricant, and with it, any abrasive dust, dirt, moisture or other impurities.

And where circulating oil lubrication is required, there is a continuous flushing and cooling of the bearing.

This is another example of how SKF helps you to obtain longer bearing life.

7711

Consult your SKF District Office today for complete information so that you can be the first to incorporate into your products this improved method of lubricating large spherical roller bearings.

SKF®

BALL AND ROLLER BEARINGS

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

—manufacturers of SKF *and* HESS-BRIGHT® *bearings.*

For More Information Circle No. 418 on Inquiry Card—Page 17

KEARFOTT R 900 SERIES SYNCHROS

for immediate delivery



These SYNCHROS are mass produced in a plant devoted exclusively to their manufacture. This makes the following advantages possible:

HIGH ACCURACY
Probable error 7 mins.
Maximum error 10 mins.

HIGH AND LOW TEMPERATURE STABILITY
Rugged construction minimizes null shift with temperature variations.

CORROSION RESISTANCE
Stainless steel housings, shafts, bearings and laminations.

LOW PRICES:

TYPE	MODEL	PRICE*
Transmitter	RS911-1A	$29.50
Control Transformer	RS901-1A	29.50
Repeater	RS921-1A	31.50
Differential	RS941-1A	51.00
Resolver	RS931-1A	44.00

**Based on 1-25 unit price with leads and standard shaft. Quantity prices on request.*

LET US KNOW YOUR DELIVERY REQUIREMENTS — WRITE TODAY

Kearfott

KEARFOTT COMPONENTS INCLUDE:

Gyros, Servo Motors, Synchros, Servo and Magnetic Amplifiers, Tachometer Generators, Hermetic Rotary Seals, Aircraft Navigational Systems and other high accuracy mechanical, electrical and electronic components.

Send for bulletin giving data of components of interest to you.

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION

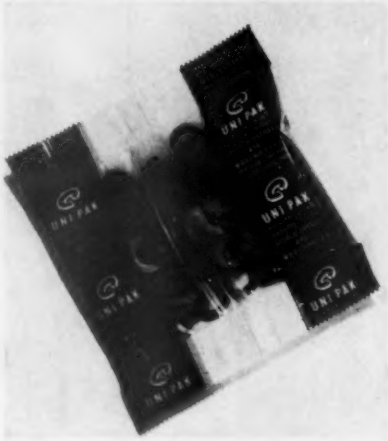
KEARFOTT COMPANY, INC., LITTLE FALLS, N. J.

Sales and Engineering Offices: 1378 Main Avenue, Clifton, N. J.
Midwest Office: 188 W. Randolph Street, Chicago, Ill. South Central Office: 6115 Denton Drive, Dallas, Texas
West Coast Office: 253 N. Vinedo Avenue, Pasadena, Calif.

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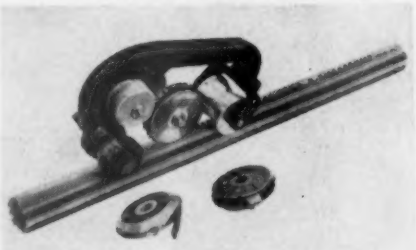
news

Unitized Package for Spring Lock Washers



A unitized package, made of "Mylar" polyester film, is said by the makers, Philadelphia Steel and Wire Corp., Philadelphia 44, Pa., to solve inventory, distribution and shortage problems encountered with spring lock washers. After the washers are automatically counted, the package, trade named "Uni Pak", is filled and sealed. It will eliminate counting out small quantities of lock washers for distribution to assembly lines or other departments and the nuisance of mixed sizes. The film has a tensile strength of 23,500 psi and the package is available in sizes #6 through ½".

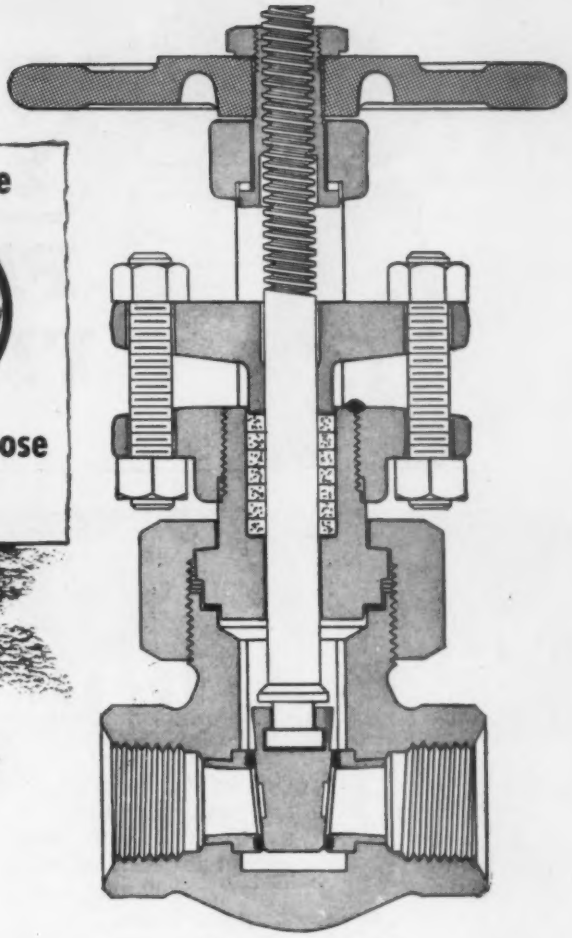
For Printing Bars, Tubes, Extrusions, Rolled Shapes



It is no longer necessary to move heavy or cumbersome stock to print inspection marks, dates,

(*Please turn to page* 340)





G-P series 5-9530

Hard faced* Seating

. . . at no extra cost!

STELLITE *faced seating surfaces* are among the many plus advantages offered by Vogt General Purpose Valves. Fusion welded to the removable stainless steel seat rings of gate valves and to the integral seat of globe and angle valve bodies, tough, long-wearing STELLITE affords amazing resistance to erosion, corrosion and galling.

The new line of Vogt drop forged steel GP's completely fills the demands of industry for a line of compact, lighter weight, shorter face-to-face valves. They assure operation economies and longer life and are available in a complete range of sizes and types from ¼" to 2". They are rated 800 pounds at 850°F. and 2,000 pounds at 100°F. Send today for free catalog.

Adv. No. 2 in a series describing the features of Vogt G-P Valves.



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Vogt GENERAL GP PURPOSE Vogt FOR BETTER VALVES

DROP FORGED STEEL

VALVES

For More Information Circle No. 420 on Inquiry Card—Page 17



ANCHOR YOUR PAINT FINISH

WITH DETREX Paintbond®

Detrex Paintbond provides positive anchorage for your paint finish . . . permanently locking the paint to the metal. Paintbond is a zinc phosphate coating which chemically interlocks with the metal surface, providing the ideal base for paint finish.

Your product will have *more sales appeal* when you use Paintbond because of these features.

1 It completely seals metal surface from moisture and other causes of corrosion.
2 It retards corrosion if the finish is scratched.
3 When scarring penetrates the metal, Paintbond restricts rust to the area of the scar.
4 It improves product appearance . . . smoother surface, more lustrous paint finish.

Detrex Paintbond will save you money, too! It coats a larger surface area per drum—or will give you a heavier coating with the same amount of compound. You also have greater control of coating weight and crystal size. Mail the coupon for complete information.

☐ Send me complete information on Detrex Paintbond. J-5159

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DEGREASERS • DEGREASING SOLVENTS • WASHERS • ALKALI AND EMULSION CLEANERS • PHOSPHATE COATING PROCESSES

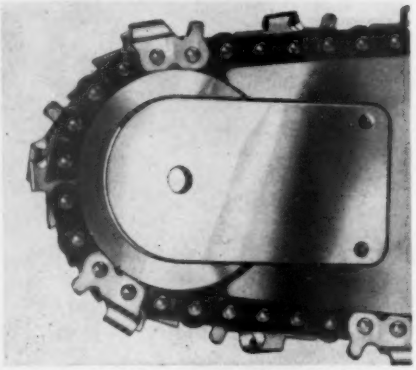
For More Information Circle No. 421 on Inquiry Card—Page 17

news

(*Continued from page* 338)

codes, trade names, etc., on it. A hand-type bar and tube printer, developed by the Pannier Corp., 207-209 Sandusky St., Pittsburgh 12, Pa., will print flat, round and many-sided parts, from 5/16" up, without making a single adjustment. The entire printer weighs less than 6½ lb and can be carried to the parts to be marked. The device will print thousands of clear, unsmudged impressions from an even flowing ink supply. It will clearly mark all types of rigid and semi-rigid materials, such as steel, plastic, wood, rubber, etc., in various letter sizes and styles.

Bearing Guide Gives Chain Saw 20% More Cutting HP



The Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill., is offering for sale a radically new snap-on roller bearing nose guide for use on any chain saw. It is claimed to be the greatest fundamental chain saw improvement ever made. By free-wheeling the chain, it produces up to 20% more usable cutting horsepower. The bearing minimizes friction between fast-cutting chain and guide bar, resulting in faster cutting and less wear. Any bar or machine shop can machine any make of guide bar to receive the roller bearing, which is available in 2½" and 3¼" diam for use on bars to 54".



Bearings of the Future for Machines of Today

Rollway Maximum Bearings are used in the McDonnell Voodoo Jet

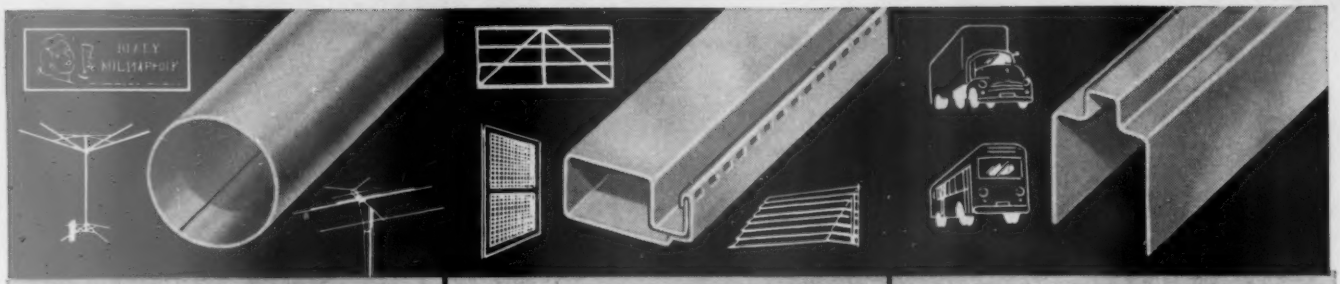
Gunned by higher speeds and higher temperatures, the performance demand for anti-friction bearings rises sharply every year. Here at Rollway, we strive always to keep abreast of the trend, and even to anticipate it. In precision, dimensional stability and simplicity, Rollway Maximum Bearings offer performance based on advanced thinking to original equipment and replacement buyers of today.

Start now, up-grade both your production machinery and your products with Rollway *bearings of the future.* Rollway Bearing Company, Inc., Syracuse 4, N. Y. Manufacturers of a complete line of radial and thrust cylindrical roller bearings.

ROLLWAY
Maximum
ROLLER BEARINGS

ENGINEERING OFFICES: SYRACUSE • BOSTON • CHICAGO • DETROIT • TORONTO • PITTSBURGH • CLEVELAND • MILWAUKEE • SEATTLE • HOUSTON • PHILADELPHIA • LOS ANGELES • SAN FRANCISCO

For More Information Circle No. 422 on Inquiry Card—Page 17



High strength and superior finish of aluminum roll formed tubing pays off in sign frames of all sizes, TV antenna, clothes dryers and many other products.

Parts for window screens, farm gates, car ports, awnings and other building products are economically produced with aluminum roll formed shapes.

Many complex truck and trailer framing members, bus strips and other parts are easily fabricated with aluminum roll formed shapes.

Specify ALUMINUM Roll Formed Shapes from REYNOLDS

for economy, design freedom, dimensional accuracy and better finishes

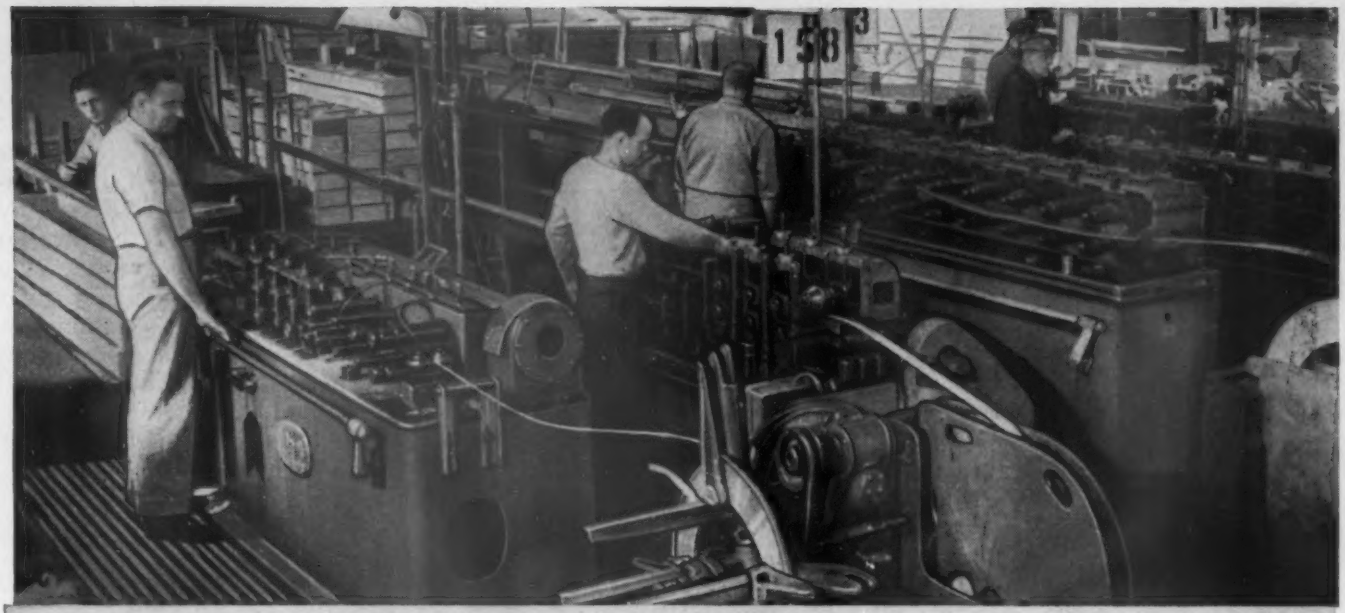
Rolling from coil stock permits savings that are impossible when working from flat sheet. Therefore, if you are fabricating a complex shape from flat sheet, or if you require a shape in long lengths, it will pay to switch to aluminum roll formed shapes from Reynolds.

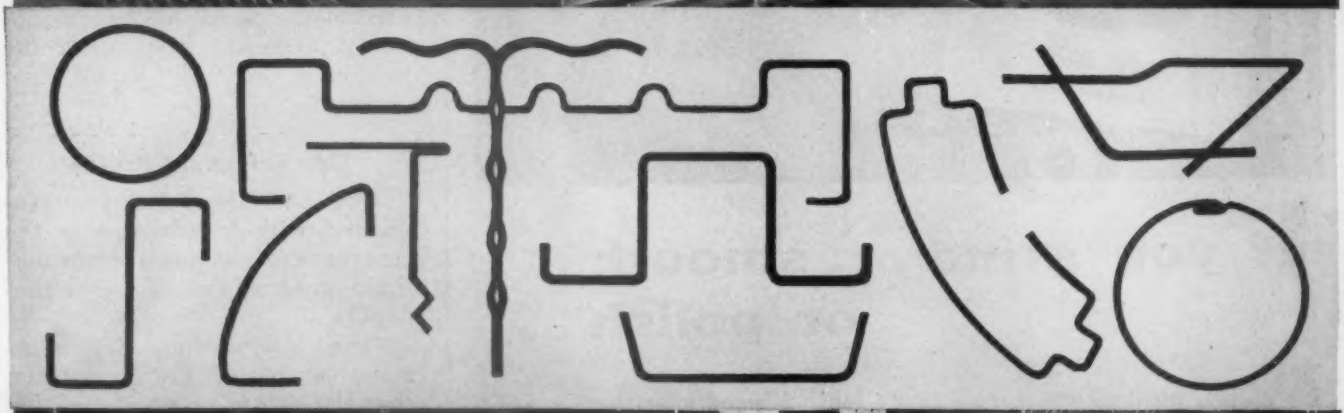
Reynolds roll forming can produce a wide range of easily fabricated shapes that aid in design flexibility. Closer tolerances on Reynolds roll formed shapes mean dimensional accuracy; better as-fabricated finishes often mean a more attractive product without additional finishing operations.

However, if an unusually high quality finish is important to the sales appeal of your aluminum product, Reynolds is your best source for clear anodized, color anodized or chemically brightened finishes on roll formed shapes. Reynolds new expanded finishing facilities go hand in hand with Reynolds sizable investment in roll forming machines and tooling.

For details contact your nearest Reynolds Office listed under "Aluminum" in your classified telephone directory or write *Reynolds Aluminum Fabricating Service, 2056 South Ninth Street, Louisville 1, Ky.*

REYNOLDS ALUMINUM FABRICATING SERVICE









The Finest Products Made with Aluminum are made with REYNOLDS ALUMINUM

© REYNOLDS METALS COMPANY



Write for your free copy of 8-page brochure, "Aluminum Roll Formed Shapes by Reynolds".

See "FRONTIER", Reynolds exciting dramatic series, Sundays, NBC-TV

BLANKING • EMBOSSING • STAMPING • DRAWING • RIVETING

FORMING • ROLL SHAPING • TUBE BENDING • WELDING • BRAZING • FINISHING

For More Information Circle No. 423 on Inquiry Card—Page 17

Smoothing the way where the going is rough



If you grind . . . smooth . . . or polish . . .

metal, plastic, wood, rubber or leather products, there's a JEWEL BRAND Abrasive Belt in the precise size and grit to meet your specific needs. All JEWEL BRAND Belts feature the unique velvet joint that runs smoother, lasts longer. Check and test the advantages of these cost-saving belts. Consult your Industrial Distributor or write direct to Abrasive Products Inc., 523 Pearl Street, South Braintree 85, Massachusetts.



"Smoothing the way where the going is rough"

Frequently AP salesmen are able to provide unusual service in supplying abrasives because their plant is neither too big to lose the personal touch nor too small to lack emergency capacity.

Abrasive Products, Inc.

SOUTH BRAINTREE 85 MASSACHUSETTS · MAKERS OF JEWEL COATED ABRASIVES

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Price Control in the Sale of Patented Articles

(*Continued from page* 128)

the court, "imposes restrictions only within the field of the exclusive monopoly right conferred by a patent. That right confers on a patentee an exclusive right to vend and it is that exclusive right which the license in question protects, and protects it only by imposing restrictions as to price, terms and conditions of sale, while the right to vend has not yet been exercised by the licensee.

"No attempt is made to fix or control prices, or to impose restrictions, after the article covered by the patent has been vended or taken out from under the protection of the patent monopoly."

Can Safeguard Profits

This the Federal Court supplemented with a reference to the contention of the government that these licenses constituted a monopoly:

"The government's case must stand or fall on the proposition that the owner of a valid patent may not exact as a condition of granting a license that the licensee will not sell at a lesser price than that at which the licensor sells.

"And the solution of this proposition, it seems, to me, turns on the question whether such a provision is within the monopoly right conferred by a patent and reasonably necessary to the patentee's protection. If both licensor and licensee are making and selling, it is quite conceivable that the owner of the patent could not safely grant licenses at all on any other terms, otherwise he would risk having his business destroyed, and hence, as a matter of business prudence, would feel obliged to keep his patent monopoly within his own hands."

In its affirmance of this decision the Supreme Court added:

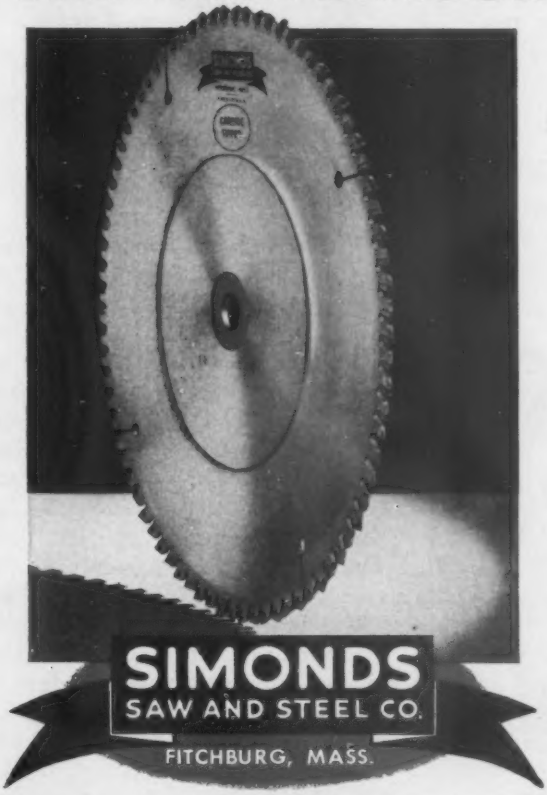
"One of the valuable elements of the exclusive rights of a patentee is to acquire profit by the price at which the article is sold. The higher the price the greater the profit unless it is prohibitory.

(*Please turn to page* 346)



SIMONDS CARBIDE-TIPPED

Thin Rim Smooth Cutting Cut-Off Saws



Here's a Simonds saw that makes it easy to get super-smooth cuts on plywood, softwood or hardwood and flush doors. It completely eliminates expensive taping and sanding operations by producing smooth, sliver-free cuts.

These unusual results, of course, are due to Simonds famous Carbide-Tipped construction. But the extra smooth cutting is due to Simonds special design. Collars are "built in", and the whole saw is made with such infinite care that vibration is practically eliminated.

The result is amazingly smooth cuts, free from splinters. And exceptionally long service even in plywoods, where the glue line dulls many other saws in a matter of hours. Ask your Industrial Supply Distributor about Simonds *complete line* of Carbide-Tipped Saws . . . one for every purpose.



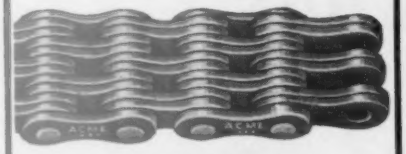
Factory Branches in Boston, Chicago, San Francisco and Portland, Oregon, Canadian Factory in Montreal, Que., Simonds Divisions: Simonds Steel Mill, Lockport, N. Y., Heller Tool Co., Newcomerstown, Ohio, Simonds Abrasive Co., Phila., Pa., and Arvida, Que., Canada

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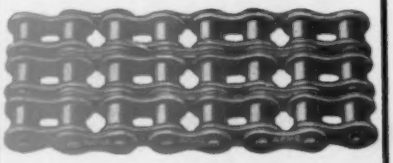
dependable ACME



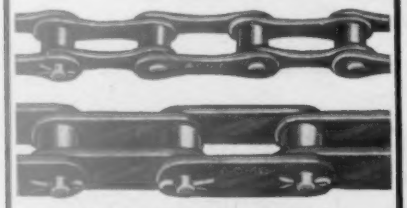
STANDARD ROLLER CHAINS
Available in pitches from 3/8" to 2½" riveted and detachable type.



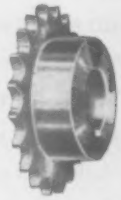
CABLE CHAINS
Acme Cable Chains are furnished in a variety of pitches, widths and strength.



STANDARD MULTIPLE WIDTH
Multiple widths of six strand or wider available for special application.



DOUBLE PITCH CHAIN
For use in slower speed power transmission and material handling conveyors.



SPROCKETS
Acme Sprockets are available in a wide range of sizes, in all types.

Acme Chains dependable under all loads at all speeds!

Years of diversified experience in chain design and engineering are behind ACME'S dependability.

Special analysis steels used throughout guarantee wear resisting surfaces and maximum tensile strength.

Acme chains function efficiently under all conditions. Acme meets the test for economy too. You can't get better so why pay more.

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Acme Chain Corporation
HOLYOKE
MASSACHUSETTS

For More Information Circle No. 426 on Inquiry Card—Page 17

Price Control in the Sale of Patented Articles

(*Continued from page* 344)

When the patentee licenses another to make and vend and retains the right to continue to make and vend on his own account, the price at which the licensee will sell will necessarily affect the price at which he can sell his own patented goods. It would seem entirely reasonable that he should say to the licensee, 'Yes, you may make and sell articles under my patent, but not so as to destroy the profit I wish to obtain by making and selling them myself.'

"He does not thereby sell outright to the licensee the articles the latter may make and sell, or vest absolute ownership in them. He restricts the property and interest the licensee has in the goods he makes and proposes to sell."

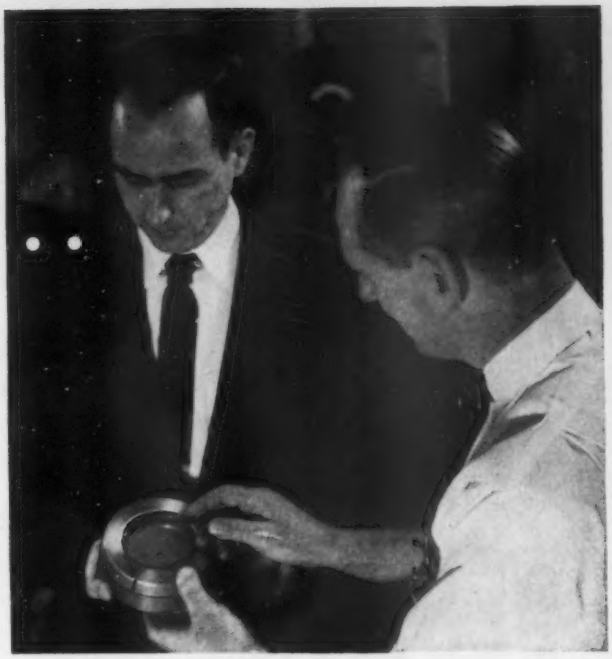
Conductors To Handle Overhead Crane Current Needs



Aluminum "inverted-Y" conductors have been especially designed with sliding shoe collectors to handle the heavy current requirements of overhead traveling cranes. They are provided with a counterweight which maintains constant pressure of the sliding shoes on the conductor bar. Each collector has two shoes which assure uninterrupted current flow. The conductors are heavy aluminum extrusions, available in 300, 500, 1000 ampere and larger sizes. They may be either side- or overhead-mounted to crane girders or runways by hangers, especially made to permit the conductors to float. They are a product of The Cleveland Crane & Engineering Co., Wickliffe, Ohio.

ASK THE FEDERAL REPRESENTATIVE . . . .

to tell your Plant Men about Latest Gaging Methods



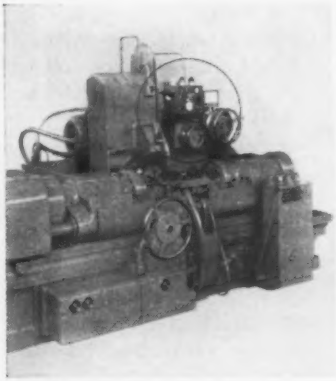
Changes come fast these days and nowhere faster than in engineering and production techniques: Advances in gaging methods have been phenomenal. No Purchasing Agent can be expected to have all the technical information. His Company will profit if the men in the plant who *use* gages have an opportunity to meet the Federal representative when he calls so they can discuss with him the best gages for their work and the latest developments in gaging methods.



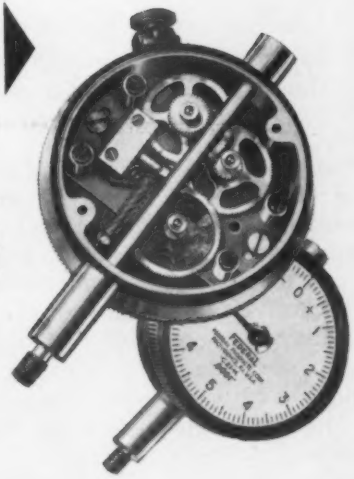
You'll want to know about the Dimensionair, the last word in air gages. It requires only *one* master which halves the usual cost for masters and greatly reduces setting up time on the job. Also, this is the only air gage whose scale is *accurately calibrated throughout its whole length* — the most modern air gage, with Accessories to adapt it for all types of finest precision inspection.



You'll want to know about Federal's Dial Indicator Gages — the most complete line in the world. The versatile, time tested, Dial Indicator Gage checks dimensions the quickest way, at lowest possible cost, and its accuracy is entirely adequate for everyday jobs. As listed in the catalog, or modified to satisfy the special needs of the work, they are unquestionably the best gage for *most* inspection jobs . . . and the simplest.



You'll want to know about Federal's revolutionary new Lifetime Dial Indicator whose fully jeweled "H" movement has *precision hardened* gears, racks, and pinions for maintenance-free operation. Rugged and shockproof — withstands impact without damage. It introduces a new low in friction — a new high in sensitivity.



You'll want to know about Federal Automation Gages — for in-process applications, for Machine Control, Automatic Sorting and Inspection. Whether the gage is electric, electronic, air, or mechanical, chances are that Federal can provide the right gage to make your Automation pay.

Since Federal makes all modern gaging systems, we can be impartial in our recommendations and supply you with whichever system best meets your needs. Your local Federal representative will gladly give you and the men in your shop the true facts about gaging.

FEDERAL PRODUCTS CORPORATION
6454 Eddy Street • Providence 1, R. I.

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FOR RECOMMENDATIONS IN MODERN GAGES . . .
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FEDERAL'S SOLUTION TO THE COST OF GAGING:
Impartial Gage Selection
Engineering Follow-Through
Everything in Gages

For More Information Circle No. 427 on Inquiry Card—Page 17

THE LATEST NEWS ON SIMPLIFYING DESIGN



John Macadam, one of National's staff of applications engineers, displays example of the forming versatility of vulcanized fibre.

Versatile Vulcanized Fibre by National reduces cost of dies and molds and simplifies parts for fast assembly.

Today's big news in product design is *simplification* through the use of molded plastic parts. But molding may not be your best answer. *Formed fibre* is often a cheaper—and better—solution!

Look to National Vulcanized Fibre as an engineering material with these advantages:

Lower die or mold costs

Excellent forming qualities

Greater durability—toughness plus resilience

Good heat resistance and dimensional stability

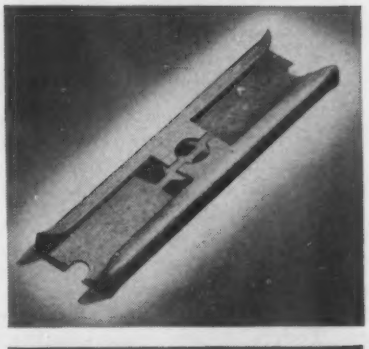
Low material cost

National Vulcanized Fibre and its unique combination of mechanical and electrical properties suit this lightweight, low-cost material to hundreds of difficult applications. And National's generations of experience can always be tapped for answers to your problems.

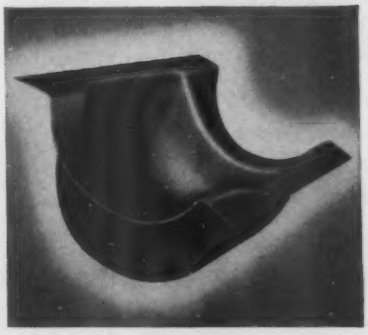
The typical examples on this page show what can result when our skilled technicians apply versatile vulcanized fibre to your particular job. Consult your nearest National representative about your current materials problem—or write Wilmington, Delaware, Dept. B-4.



Drawn and formed in one operation, the hip guard shown here possesses the resilience, toughness and shape retention that make vulcanized fibre the most used material for protective athletic equipment. Channel draw strengthens structure yet retains necessary spring. The piece is dipped, then baked with synthetic enamel for moisture protection and good appearance.



Punched, formed, scived and flared, this insulator component shows the successful solution of a difficult problem—boxing a channel on all four sides. In fabricating, the blank of vulcanized fibre was first cut to contour, after which the ends were scived, then formed into a box section and flared. This combination of operations makes the piece unusual.



Formed and deep drawn to a depth of 7 inches, this welder's helmet demonstrates the extreme workability of vulcanized fibre. Fabrication was by a single draw with an open bottom die—i.e., fibre was pulled in four different directions. Drawing depth and radii curve are about the maximum limit.

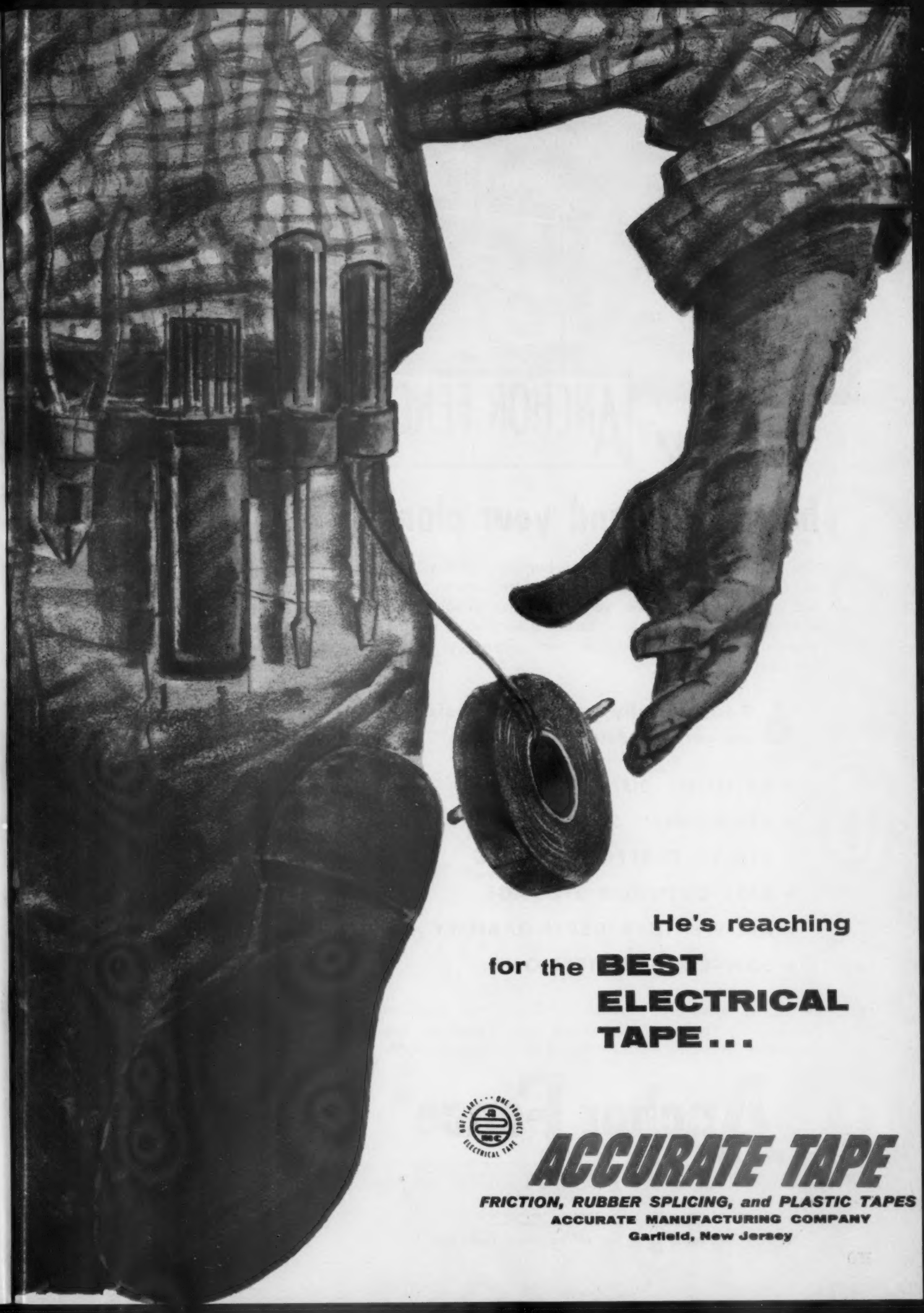
NATIONAL
VULCANIZED FIBRE CO.
WILMINGTON 99, DELAWARE

In Canada: **National Fibre Company of Canada, Ltd.** • Toronto 3, Ont.

VULCANIZED FIBRE • PHENOLITE LAMINATED PLASTIC • PEERLESS INSULATION
KENNETT MATERIALS HANDLING RECEPTACLES • VUL-COT WASTEBASKETS
LESTERSHIRE TEXTILE BOBBINS • VULCOT PRODUCTS FOR THE HOME

For More Information Circle No. 411 on Inquiry Card—Page 17

For More Information Circle No. 428 on Inquiry Card—Page 17→



He's reaching

for the **BEST ELECTRICAL TAPE...**

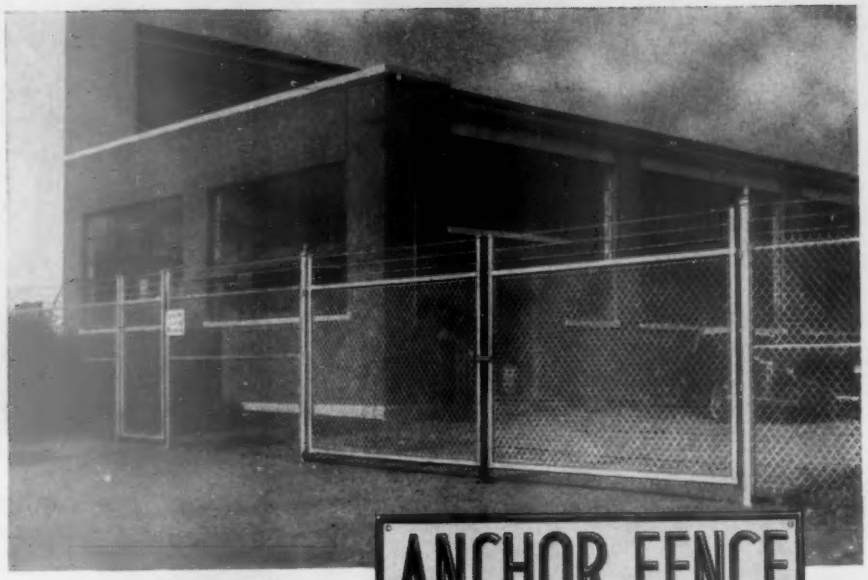
ONE PLANT... ONE PRODUCT ELECTRICAL TAPE

ACCURATE TAPE

FRICTION, RUBBER SPLICING, and PLASTIC TAPES

ACCURATE MANUFACTURING COMPANY

Garfield, New Jersey



Why ANCHOR FENCE belongs around your plant!

The famous orange and black Anchor nameplate tells you the fence you buy is a lifetime fence. Deep-driven anchors will keep it erect, in line, year after year, in all kinds of weather and soil conditions. It needs no annual painting. Insist on Anchor—the fencing zinc-coated *after* weaving, not *before*.

6 Reasons why you should insist on *genuine* Anchor Fence!

- 24-HOUR DUTY
- PERMANENT SAFEGUARD
- AID TO TRAFFIC CONTROL
- SAFE OUTDOOR STORAGE
- ALL-WEATHER DEPENDABILITY
- LOW-COST PROTECTION

For full information about Anchor Fence, call your local Anchor office, or write to: ANCHOR POST PRODUCTS, INC., *Industrial Fence Div.*, 6615 Eastern Ave., Baltimore 24, Md.

Anchor Fence®

Division of ANCHOR POST PRODUCTS, Inc.

Plants in Baltimore, Md.; Houston, Texas; and Los Angeles, California
Branches and Warehouses in all principal cities

For More Information Circle No. 429 on Inquiry Card—Page 17

Standards and the PA

(*Continued from page* 111)

quality of all purchased goods received, in comparison with specifications. Standards for such appraisal — including methods of sampling, inspection, and test—safeguard quality and costs. Obviously, purchasing must be aware of such standards and can use them as one of its buying tools.

Quality control of finished product indirectly affects purchasing in that it maintains quality of design and production standards and the materials required therefor. Its influence works back through all parts of the organization and all stages of the production process. This, of course, bears upon value analysis and make-or-buy decisions.

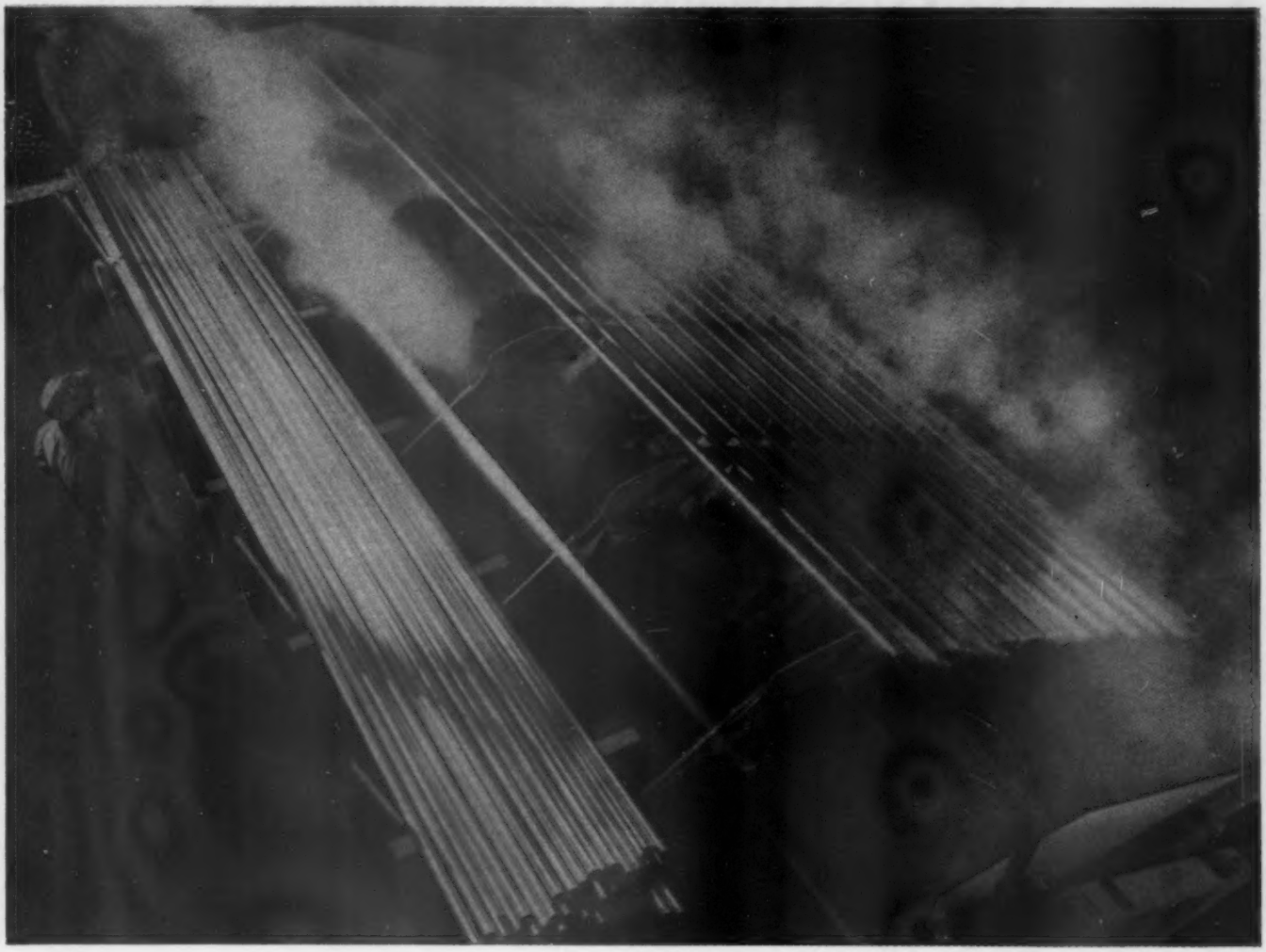
In summary, we have tried to show how standards pervade all phases of industrial activity, and in particular how they affect purchasing. An understanding of the underlying principles of standardization, instead of scanning only the written standards that are the end product of the standardization process, will aid in the development of sound standards and their effective application on a broader scale.

Hydraulic Accumulator Can Cut Motor Costs

By accurately storing up energy during selected time of a cycle, large expensive electric motors are eliminated by using small, economically operated motors. This is made possible by an accumulator designed by John S. Barnes Corp., Rockford, Ill. It features a unique diaphragm which is only flexed, but never stretched. It operates indefinitly without loss of pre-charge pressure. It is supplied by either nitrogen or regular air under pressure. Typical of its many uses are traversing mechanisms, indexing turrets for high speed lathes, clamps and actuating devices.

SEE PAGE 17 FOR INQUIRY CARD

NOW!
SPANG CW GALVANIZED FINISH IS BETTER THAN EVER!



New quenching facilities at Etna produce improved bonding, longer pipe life for your installations

SPANG takes the lead again in product improvement by the addition of new quenching facilities in the manufacture of galvanized CW Steel Pipe. These facilities handle ½" to 4" pipe after it has been galvanized, cooling it in a sodium dichromate solution from 800 F to 160 F under close control.

This careful quenching results in a better bond between the layer of zinc and the steel surface of the pipe, and increases the ductability of the zinc coating.

Here's what it does for you

First, the stronger bond gives you added assurance that the galvanized finish on SPANG CW Pipe will not crack, flake, chip or peel, even under the severest bending strains.

Second, the chemical reaction of the sodium dichromate on the finish retards the formation of white rust on the pipe, an important factor in adding extra service life, especially when ocean shipments are involved. In addition, the galvanized, lustrous finish stays brighter longer.

Add to this all the other *quality-control* features that go into the manufacture of SPANG CW, and you have a *top-quality* product for *top-quality* installations . . . a steel pipe that's clean, uniform, strong, easy to work with.

Take advantage of SPANG's *quality control*. Order SPANG CW Pipe from your nearby SPANG Distributor. He carries the complete line.

SPANG-CHALFANT

DIVISION OF THE NATIONAL SUPPLY COMPANY

General Sales Office: Two Gateway Center, Pittsburgh, Pa. District Sales Offices: Atlanta, Boston, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis



For More Information Circle No. 430 on Inquiry Card—Page 17

SPECIAL OFFER
TO PURCHASING DEPARTMENTS
NOW RECEIVING PURCHASING MAGAZINE

Because PURCHASING Magazine is edited specifically to help purchasing people do a better purchasing job, we feel strongly that this publication should be in the hands of *all* purchasing personnel.

As a person shouldered with the responsibility of performing an efficient purchasing function, you should have your own personal copy of PURCHASING. The articles are written just for you! New ideas . . . news latest purchasing methods . . . current trends . . . market conditions . . . new products—all these should be easily accessible to you.

You shouldn't have to wait while copies pass from hand to hand—or be limited in the time to read and digest the contents. Such delays and limitations may cause you to miss an article or an idea that may result in great savings for your company.

HERE'S OUR OFFER!

Instead of paying our regular rate of $4.00 for a one-year subscription — we will enter NEW 1-year subscriptions for your company at $3.00 each . . . if received in groups of 4 or more.

The recipients must be *NEW* readers, and be active in a purchasing function.

HOW TO GET IT!

Mail the names with titles to:

Subscription Manager
Purchasing Magazine
205 E. 42nd Street
New York 17, N. Y.

That's all! The subscriptions will be entered immediately at the $3.00 rate and your company billed.

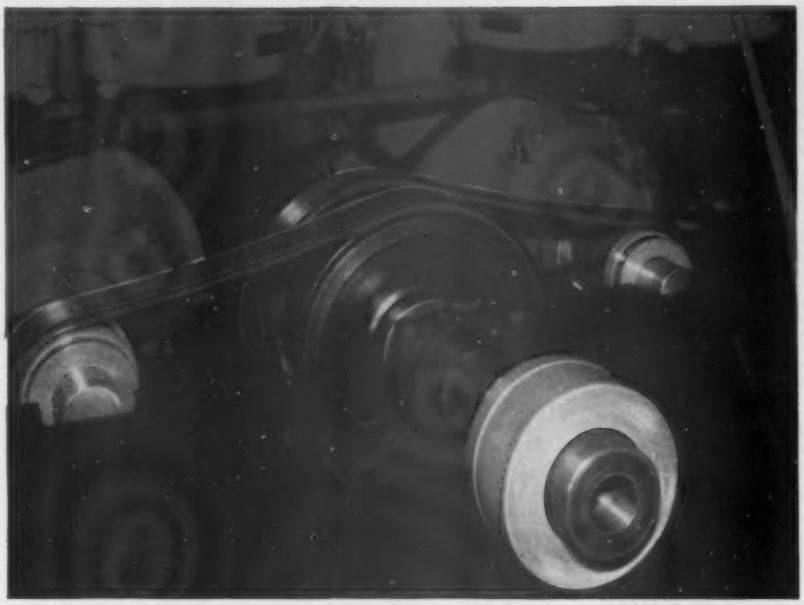
NOTE:

Your subscription will include Purchasing's special May "Cost Reduction Data Book" Edition. This issue alone is worth many times the yearly subscription fee. It's a book retained year 'round by purchasing people as a reliable source of reference.

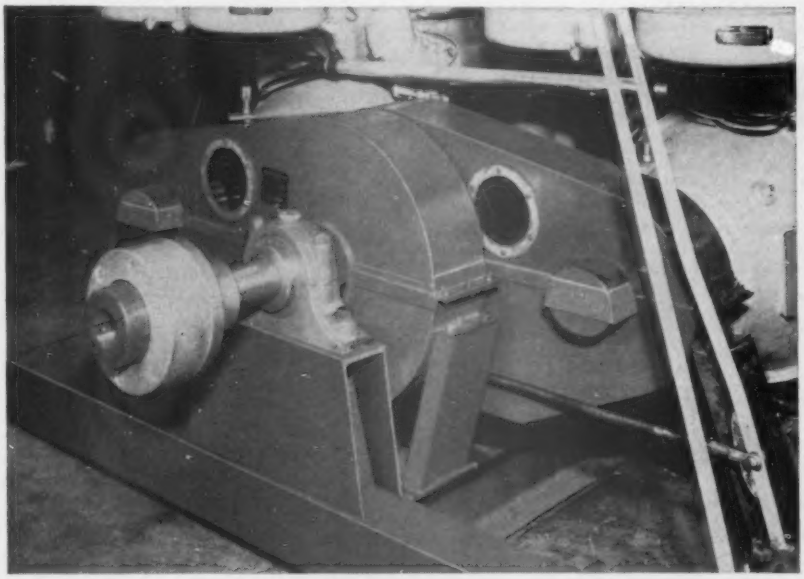
A PAID SUBSCRIPTION IS THE ONLY WAY TO ASSURE YOURSELF OF RECEIVING EVERY ISSUE OF PURCHASING MAGAZINE.

PURCHASING Magazine—205 East 42nd Street—New York 17, New York

Get Maximum HP Output from High-Speed Diesel Engines with Morse Hy-Vo Drives



Note the smooth action of Morse HY-VO in operation. Matched 182-HP diesel engines, operating at 1450 RPM, are twinned through HY-VO Drives to jack shaft, which operates at 650 RPM. Jack shaft delivers 364 HP to load shaft (not shown), to which it is coupled with Morse Morflex Radial Coupling (see below).



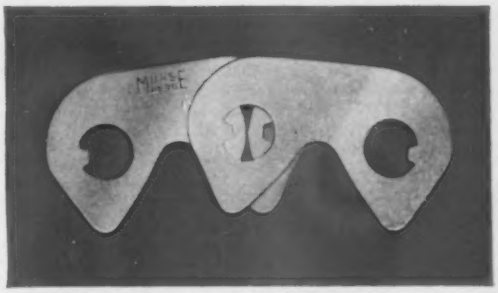
Twin HY-VO Drives are encased in sealed casings, permit continuous forced-spray and sump oil lubrication. Observation ports permit inspection. Morflex Radial Coupling cushions any shock loads from driven unit, prevents engine pulsations from entering driven shaft.

Southern Bearings Service and Lewis-Diesel Engine Company solved difficult cotton gin drive problem at low cost to customer.

Morse Hy-Vo Drives helped solve a typical power-transmission problem for Lewis-Diesel Engine Company (Memphis, Tennessee). Working with Southern Bearings Service, Inc., the local Morse distributor, they combined twin high-speed diesels with two Morse Hy-Vo drives to get low-cost, low-speed, high-horsepower output to a cotton gin main drive.

By compounding two small, high-speed diesel engines with required reduction ratios, the need for a big, expensive, low-speed engine was eliminated. Quick access to individual drive units was made possible without disturbing main compound base. Customer downtime is reduced to a minimum.

Compact Morse Hy-Vo Drives provide smooth, positive power transmission at speeds up to 8,500 fpm. They combine the positive action of gears with the favorable load distribution of chain; are rated at 20,000 hours' service life.



HY-VO Drive links, showing exclusive rocker-type joint. Rocker joint reduces wear and friction, results in coolest running chain drive.

Complete information free

For complete information and engineering assistance on Morse HY-VO Drives, contact your nearest Morse distributor. Write, wire, or call him today.

MORSE CHAIN COMPANY
INDUSTRIAL SALES DIVISION
ITHACA, N.Y.

MORSE MORSE B-W BORG-WARNER *Trademark **POWER TRANSMISSION PRODUCTS**

For More Information Circle No. 431 on Inquiry Card—Page 17

BUYER'S & SELLER'S MART

Contract Work • Equipment For Sale • Employment and Business Opportunities

Positions Wanted

Purchasing Agent 17 years experience Electric Hair Dryers, Hydraulic and Lounge Chairs for Beauty Parlors, Machine Tools, Electronics, Automobiles, Trucks and varied line of metal products covering all phases of purchasing.
Formerly Divisional Purchasing Agent for one of the world's largest corporation.
Also Material Supervisor, stockroom organizer and salvage specialist.
Write, Box 1481, Purchasing, 205 East 42nd St., New York 17, N. Y.

PURCHASING AGENT

Electro Mechanical Assemblies, Meters, Electric Measuring Instruments. 12 Years Solid Experience. Excellent administrator in cost reduction, planning, production control, inventory systems, department operation. Intimate knowledge of markets and vendors. College graduate. Technically trained, smart trader. Currently part of administrative team. Seeks change for broader expression and challenge. N.Y.C. or Long Island. Start $10,000. Write, Box 1480, Purchasing, 205 East 42nd St., New York 17, N. Y.

PURCHASING AGENT OR ASSISTANT. Seven years diversified experience aircraft, auto, fuel line and carbide mfgr. Age 29, married, three children, college graduate, excellent references, seeking opportunity with established company with future. Write, Box 1488, Purchasing, 205 East 42nd St., New York 17, N. Y.

PURCHASING AGENT AVAILABLE

ELECTRONICS 6 years diversified experience in buying Military & Commercial material for manufacturer of electronic equipment. Familiar with Govt. Specs. Age 28. College—Seeks new opportunity N.Y.C., New Jersey, Conn., or Long Island. Write Box, 1479, Purchasing, 205 East 42nd St., New York 17, N. Y.

WANTED ABRASIVES—
Sanding Belts, Rolls, Sheets, Snap Gauges, etc.
For most cash and a quick deal
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There's BUCK$ in Buckskin. Send 50¢ today for Buckskin drawstring money pouch and WHOLESALE CATALOGUE. BERMAN BUCKSKIN CO., Dept. 56, MPLS, MINN.

LP GAS INSTALLATIONS and ANHYDROUS AMMONIA PLANTS
Designed & Installed
"There's No Substitute For Experience"
PEACOCK CORPORATION
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Box 268, Westfield, N. J.

Help Wanted

PURCHASING AGENT

"Established and expanding heavy machinery manufacturer in Northeastern Pennsylvania requires man to take charge of purchasing department. The man we seek may be one who is at present an assistant in a large company or who feels that his present advancement is limited or slow and is ambitious for a greater challenge. He should preferably be in his late thirties or early forties. Applicant should have qualifications of broad purchasing and administrative responsibilities with experience in procurement of diversified raw materials and machinery components, steel and electrical equipment desirable. Please write giving full particulars as to age, education, experience, availability, present earnings and salary requirements. All replies will be held in strictest confidence." Write, Box 1485, Purchasing, 205 East 42nd St., New York 17, N. Y.

ASSISTANT PURCHASING AGENT
CONTAINERS AND PACKAGING

Excellent opportunity in head office for a man with extensive industrial experience in the procurement of all types of containers. Must be thoroughly familiar with packaging, packaging equipment and supplies, with knowledge of material handling. Administrative experience and negotiating ability important. Applicant must be able to coordinate related functions between departments, establish specifications, promote standardization, etc. Please submit complete resume and state salary desired. All replies held in strict confidence. Write, Box 1484, Purchasing, 205 East 42nd St., New York 17, N. Y.

ADMINISTRATIVE ASSISTANT — PURCHASING

Leading chemical manufacturer has attractive opening for young man with experience in industrial organization, practices and procedures. Some technical and personnel background desirable. Please submit detailed resume and salary desired. All replies held in strict confidence. Write, Box 1482, Purchasing, 205 East 42nd St., New York 17, N. Y.

Purchasing Staff Assistant

The man we want is between 35 and 45 years of age; has a college education or equivalent with a sound background in purchasing techniques, good trade relations with and knowledge of steel mills, forgers, casting sources (grey iron, malleable iron, steel) heavy chemicals, automotive and rubber products, electric motors, generators and turbines, and electronics. This man will have a forceful yet pleasing personality with a knack of getting things done through other people. Opportunity involves considerable air travel with one of the fastest growing companies in the Southwest.
Send resume in duplicate with recent photograph. Write, Box 1486, Purchasing, 205 East 42nd St., New York 17, N. Y.

BUYER—EQUIPMENT AND CONSTRUCTION

Large internationally known chemical manufacturer has highly desirable opening with opportunity for growth available to a young man having industrial experience in the procurement of equipment and construction items. Requires engineering degree or equivalent experience plus good negotiating ability. New York City location. Some travel necessary. Please submit detailed resume and salary desired. All replies held in strict confidence.
Write, Box 1483, Purchasing, 205 East 42nd St., New York 17, N. Y.

Genuine Engraved Letterheads
Free Die — Free Design — Free Proof
Engravers Parchment Paper
Lowest prices — Quality work
E. J. DUNNE COMPANY
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OPEN TIME ON
Duplex Miller, 18" x 72"
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Superior Workmanship Rapid Delivery
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HEnderson 5-1500

PURCHASING AGENT

Outstanding opportunity with nationally known, well-established midwest manufacturer of molded rubber and plastic products. Newly created permanent position located in pleasant medium-size city. Will work closely with company executive and be responsible for all purchasing of rubber and plastic parts and molds. Excellent opportunity for advancement. Age 32-47. Must have good industrial purchasing experience. Knowledge of plastic and rubber compound would be helpful. Salary open—commensurate with ability. Send detailed resume including salary progression. All replies confidential.

Write Box 1487, Purchasing, 205 East 42nd St., New York 17, N. Y.

Crucible gives you
wide selection,
dependable delivery of

Cold Rolled Specialty Steels



For a *full* selection of cold rolled specialty steels – call Crucible. Deliveries are on-schedule – in the size, grade, finish or length you need.

And Crucible's new mill facilities mean closer control of rolling . . . insure greater physical uniformity . . . fine finish . . . better edges . . . flatter strip.

Whether you use carbon spring steel, alloy strip steel, or many other ferrous analyses that can be cold rolled, you can't beat Crucible. More information is contained in the 32-page booklet, "Cold Rolled Specialty Steels". Write for your free copy now. *Crucible Steel Company of America, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

For More Information Circle No. 432 on Inquiry Card—Page 17

New Micrometers Feature Interchangeable Anvils

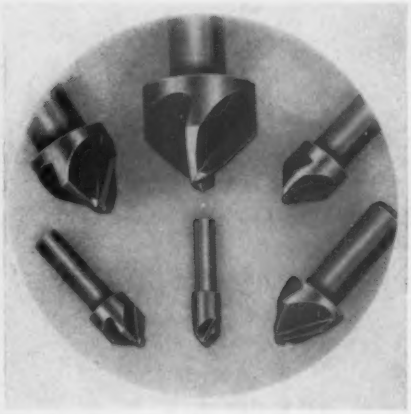


Because of their universal features, new patented micrometers introduced by The L. S. Starrett Company, Athol, Massachusetts, will handle a wide variety of measurements impossible to obtain with regular micrometers. They feature multiple interchangeable anvils.

Two anvils are furnished: a rod anvil approximately .120" diameter and a flat anvil .125" and .060" thick at opposite ends. The rod anvil is useful for measuring from a hole to an edge. With the flat anvil, distances from the inside of slots and grooves to an edge can be conveniently measured. Additional anvils of various shapes can be made up by anyone and do not necessarily have to be hardened for occasional special jobs.

Starrett "Mul-T-Anvil" Micrometers are available in two sizes with ranges of 0 to 1 inch and 1 to 2 inches in thousandths of an inch.

Chatter-Free Carbide Countersinking



Severance Tool Industries Inc., 672 Iowa St., Saginaw, Mich., announces that it is now making carbide countersinks which result in less down time, increased production, greater precision, longer consistency of operation and all the other advantages of carbide over ordinary high speed steel countersinks. The company claims that the cost of regrinding these carbide countersinks is generally less than the price of new high speed steel units. The carbide countersinks come in all popular angles and sizes. They can be used with a variety of machines for any countersinking operation, drill presses, screw machines, lathes, etc.

Carbide-Tipped Saw Blades Work in Pairs

Claiming a finer finish with fewer teeth, DeLuxe Saw & Tool Company, High Point, N.C., has marketed a new line of blades under the name of Karbide-King Trim Side. These blades are made especially for all operations where right and left hand blades are used in pairs for simultaneous cuttings in panel sizing, dimension trim work, double-end trim miter operations, or for any other work where only one side of the cut is required to be smooth and chip-free.

NEW HOOD PROTECTIVE BUTYL GLOVES

.....protect valuable hands from the most destructive acids!



The only glove of its kind! It's non-porous, made of an exclusive butyl rubber compound that *can't absorb*. It resists the most destructive agents: sulphuric, nitric and phosphoric acids, oxygen, ozone, oils, salts and many others. Hood tested the new glove under actual working conditions in the plant of one of the largest chemical manufacturers in the world.

Write today for free Hood Glove Guide — shows you how to choose the RIGHT glove for EACH job.

HOOD RUBBER CO., Watertown, Mass.
a division of the B. F. Goodrich Company

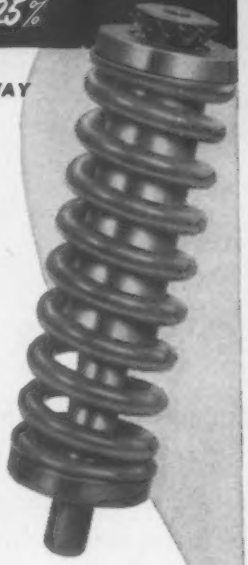
RUBBER · NEOPRENE · PLASTIC COATED INDUSTRIAL GLOVES

For More Information Circle No. 433 on Inquiry Card—Page 17



WALES "Strippits"
can save up to 60% time,
BOOST PROFITS 25%

. . . stripping Metal from conventional Dies the WALES-WAY



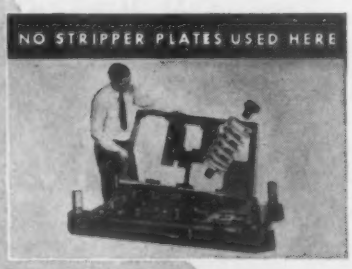
● WALES STRIPPITS are sure tempered springs, held compressed by retainers. Uneven stripping pressure is eliminated completely, having constant pressure standard at all points and at all times and under all conditions.

No more costly delays, removing dies from the press for repairs. With WALES STRIPPITS, dies never need be removed nor dismantled for any repairs. Stripper plates easily and quickly removed in the press. The plates may be half usual thickness or non-existent, as there is no pressure exerted until the WALES STRIPPITS go into action.

Save up to 60% man hours and material cost in die making. Installation is EASY. WALES STRIPPITS pay for themselves over and over in time saved on every job.

Our ENGINEERING SERVICE is for YOU!

We'll be happy to make an analysis of your production and give you suggestions as to how WALES STRIPPITS can supplement your present methods and INCREASE YOUR PROFITS. No obligation.



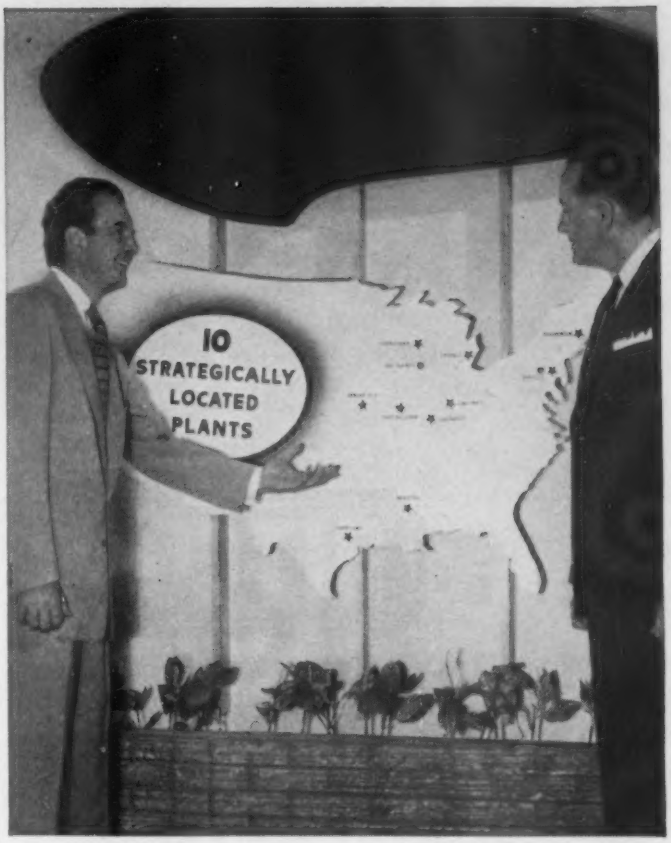
This picture shows work blanked by die, equipped with WALES STRIPPITS. Even STRIPPIT pressure releases work piece instantly.

Send for BULLETIN NO. 19A

Filled with pictures and examples of WALES STRIPPITS in use. Mailed to you without cost and by return mail.



WALES Strippit CORPORATION
"...the Wales-Way is the PLUS-PROFIT way"
345 PAYNE AVE. — North Tonawanda, N.Y.
WALES-STRIPPIT OF CANADA LTD., HAMILTON, ONT.



"General's ten factories assure your plants of better container service and lower costs"

Prompt and economical delivery of the containers you order is an important part of the regular service offered by General Box Company. Factories are located in or near the nation's major producing centers. The duplicate production facilities these 10 modern plants contain assure on-time delivery tuned to your needs even under unusual circumstances.

A second important service advantage General Box offers you is access to some of the finest container design and testing facilities in the industry.

Find out the dollars-and-cents advantage to you of this national container service—dependable delivery from the General Box factory near you of containers custom-engineered for your products. Let us send a man to give you the facts. No obligation. Ask, too, for your free copy of the informative booklet, "General Box."

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

General Box
1839 Miner Street, Des Plaines, Ill.

★ ★ ★ ★ ★

• Wirebound Crates and Boxes • Generalift Pallet Boxes • Corrugated Boxes • Cleated Corrugated and Watkins-Type Boxes • Stitched Panel Crates • All-bound Boxes



Exclusive New England
Agent for all products
of Cleveland Cap Screw Co.

WRITE RITCO INTO YOUR PLANS . . .

FOR FINER FORGINGS AND FASTENERS, let RITCO meet your design requirements . . . save you machining time and money!

Clean, accurate RITCO Forgings . . . Drop or Upset . . . are made to blueprint specifications in many metals and in weights from ¼ to 15 pounds. Their smooth, flash-free finish and tremendous strength make them ideal for a wide variety of uses.

RITCO also makes Special Fasteners and finished bolts and offers complete machining facilities. Ask for prices or a sample RITCO Forging.

RHODE ISLAND TOOL COMPANY
SINCE 1834
150 WEST RIVER STREET, PROVIDENCE 1, R. I.

For More Information Circle No. 436 on Inquiry Card—Page 17

Where you want **nothing** to grow



SS WEED-KILLER

Gets them *fast*
Gets them *all*
Keeps them *off*

Dolge SS WEED-KILLER is deadly to any weed it hits. After one thorough application of this potent soil-sterilant, unwanted plant life can't even get started through the growing season. . . . Safeguards parking lots, terraces, drives, walks, gutters, sand traps, courts, tracks and other areas against ruinous growth. . . .

Reduces fire hazard by eliminating flammable vegetation close to industrial locations. . . . Finishes such hardy pests as poison ivy, wild honeysuckle, bindweed, crabgrass. . . . Cuts ground maintenance costs drastically. . . . One gallon of SS WEED-KILLER in solution treats 1250 square feet on the average.

Write for free, up-to-the-minute booklet on weed control. See your Dolge Service Man

operated by
DOLGE
WESTPORT, CONNECTICUT

For More Information Circle No. 437 on Inquiry Card—Page 17

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more skill in every hand with Billings Tools



THE
"ARISTOCRAT OF WRENCHES"
VITALLOY® FORGED
engineers' double head—15° angle

BROTHER, hold this baby in your hand and you know what "feel" in a wrench means.

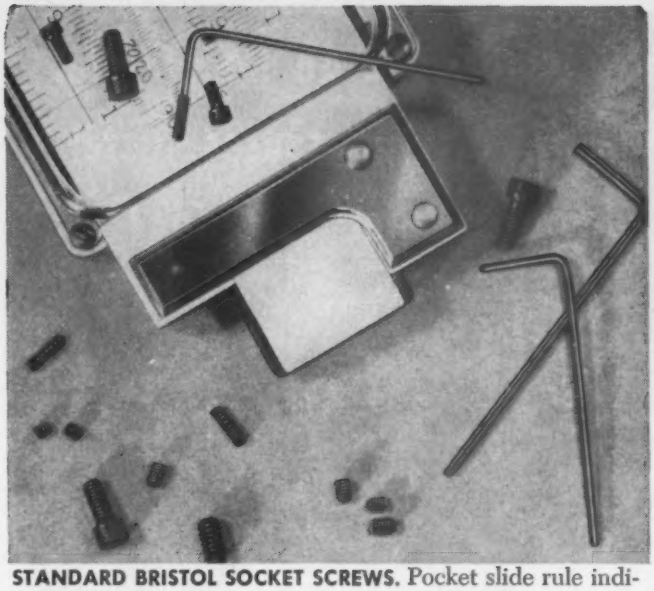
TALK about skill—this beauty makes pros of amateurs. It's light yet tremendously strong—made from Billings selected alloy steel—drop-forged, heat treated.

OPENINGS are clean, shaped accurately for snug fit. Tapered jaws, thin heads get into cramped quarters. Sizes clearly stamped on polished faces. Finished in chrome plate over copper and nickel.

MORE skill because of better design, lightness, strength . . . Less tool replacement cost—**it lasts longer so it costs less.** Makes sense, eh?

BILLINGS WRENCHES & SHOP TOOLS
BUY 'EM FROM YOUR DISTRIBUTOR
Quality Tools & Forgings Since 1869
THE BILLINGS AND SPENCER CO. • HARTFORD 1, CONN.

For More Information Circle No. 438 on Inquiry Card—Page 17



STANDARD BRISTOL SOCKET SCREWS. Pocket slide rule indicates size.

Miniature socket screws for electronic equipment, instruments, and other small components

At Bristol we're old hands at precision instrument making—know what the problems are.

And we're also specialists in tiny, socket set and cap screws. They're standard at Bristol in sizes from No. 0 wire up to 1 inch in both hex and Bristol's Multiple-Spline socket in alloy and stainless steel.

Precision socket screws have been a Bristol product since 1913. And we've been turning out miniature socket screws by the millions since 1950. In fact we originated the famous Bristol Multiple-Spline socket.

Bristol Multiple-Spline socket screws can be wrenched up tighter and hold tighter than other socket screw types. Gear-like teeth in the multiple-spline socket transform all internal wrenching force into rotary power and protect tiny thin-walled screws against stripped sockets.

Today's automatic and semi-automatic production techniques pose no problem for Bristol's socket screws. They're used by the millions every year in instruments, computers, guided missiles and such competitive products as razors and cameras. And the new Bristol thru-broached socket screw for hopper feed is even more in line with the trend toward automation.

Find out all about Bristol socket screws. Ask your industrial distributor or write the Bristol Company direct. A.6.1A

Precision Socket Screw Manufacturers Since 1913



Made in sizes as small as No. 0 in Alloy Steel and Stainless Steel. Cap Screws up to 1½".

THE BRISTOL COMPANY, Socket Screw Division, Waterbury 20, Conn.

For More Information Circle No. 439 on Inquiry Card—Page 17

TO PURCHASING AGENTS ONLY!

FREE! Your Choice...

Evans KING SIZE 10-ft. White-Tape
(EXTRA-WIDE BLADE)

or Evans Pocket 12-ft. White-Tape
(REGULAR ½" WIDE BLADE)



Attention Purchasing Agents:

We make this startling offer to introduce your company to Evans' superior King-Size and Pocket White-Tapes, the finest measuring tapes manufactured.

Simply fill in the coupon below and we'll send you, absolutely free and without any obligation, your choice of either our King-Size 10-ft. ($2.39 retail) or Pocket 12-ft. White-Tape ($1.89 retail)! (Offer limited to one tape per purchasing agent.)

We feel that once you try Evans Tapes, you'll never buy another brand. Here's why:

EVANS KING-SIZE

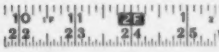


10-ft. ¾" Wide Steel Tape Stands Up Straight for Easy One-Man Measurements.

The 33% wider blade (full ¾") stays straight up—will not bend when making measurements. Chrome plated zinc die-cast case. Free belt clip for handy carrying and Free Tenite Utility Case. Self-adjusting sliding hook for accurate inside-outside measuring.

Also available in 6, 8, 12-ft. lengths.

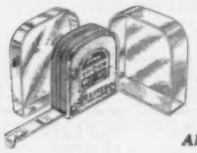
All EVANS Tapes are marked so your men don't have to figure!



Work in feet and inches? Read Here

Work in inches? Read Here

EVANS 12-ft. Pocket WHITE-TAPE



Measures a full 12 feet—eliminates adding two measurements as with shorter tapes. Regular ½" wide blade. Chrome plated zinc die-cast case. Self-adjusting sliding hook for 100% accurate inside or outside measurements. Free transparent Tenite Utility Case.

Also available in 6, 8, and 10-ft. lengths.

3224

Evans RULE CO., Department 207
400 Trumbull Street, Elizabeth, N. J.

Please send me free sample of (check one)

☐ King-Size 10-ft. Steel Tape ☐ Pocket 12-ft. White-Tape

My two sources of supply for steel tapes are:

1_____

2_____

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

For quick, efficient service call your Industrial Distributor. He is your most economical source of supply.

For More Information Circle No. 440 on Inquiry Card—Page 17

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We appreciate that speedy delivery may well save you hundreds of dollars in downtime on a key machine . . . In most cases, orders are processed and shipped the same day as received. Our stocks are constantly increasing, enabling us to fill almost any order as to size *and quantity.*

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Your Best Source When You Need Bearings Quick!

For More Information Circle No. 441 on Inquiry Card—Page 17

New Pittsburgh Red Center construction assures faster, better, easier brushing!



Red Center Power Driven Brushes are built for heavy-duty operation. Wire gauge —hub diameter selected to give correct "fill" and flexibility for the job!

Here's how Red Center Brushes work

Even distribution of wire is made around the hub. Naturally the hub size determines amount of wire used. The larger the diameter the more wire used and more rigidity obtained. Three diameter sizes: Flexible (Long Trim), Standard (Medium Trim), Heavy-Duty (Short Trim), all built with gauge wire you specify.

What does Red Center mean to you

Pittsburgh Red Center means precision brushing made by uniform "fill" of a specific gauge, quality wire—mounted in a specially designed hub to give exact brushing surface and strength required. With all these features you're assured of longer brush life, faster cutting, finer finishing.

GET THE FACTS: for information regarding your specific brushing problems, write: PITTSBURGH PLATE GLASS CO., *Brush Div.,* Dept. L-4, 3221 Frederick Ave., Baltimore 29, Maryland.

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Power Driven **BRUSHES**

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PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

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Quality VS. Cost



—No longer an "O" RING problem!

ROTO-MOLD provides the answer to large orders of precise quality "O" Rings in a hurry—at competitive prices.

Another LINEAR *first*, the new, exclusive ROTO-MOLD process brings automation to the packing industry. You get—

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LINEAR

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Freeway's PATENTED dies, which blank, form and trim small metal stampings in ONE operation . . . cut press costs almost in half on these parts, to insure our customer a substantial saving. Other precision stampings reflect the same economical handling . . . at Freeway. Let us prove these savings . . . with a quotation.

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F

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letters

FEEBLE HORNS

After reading with interest the December Report on Purchasing Opinion ("Do Buyers Have Scope to Do A Complete Purchasing Job?" p. 77) I am greatly disappointed in many members of my profession, especially when reading the portion of the article headed "What They Say."

I wonder if some of these comments don't reflect a weakness which is damaging to the field of purchasing.

The Purchasing Agent cannot be a quiet mousey individual who leans back and lets other departments move in on his territory, without climbing up on his hind legs. Purchasing can never be left out of long range planning, if they have so conducted themselves to prove of value to the company. In any profession, a little "horn tooting" is the only way management will ever know that we are present. I imagine that the production people in this instance have a much larger horn than the Purchasing Agent.

Seriously, I realize that purchasing in some companies has taken a "back seat" in its importance to management. However, I do firmly believe that a strong, resourceful and intelligent Purchasing Agent can very rapidly make his place, and a place for his department, with any company management. This standing means work—and hard work—as a swivel chair can never replace results obtained by an intelligent and resourceful approach to purchasing by an ambitious and hard working purchasing staff. A Purchasing Agent can never bring this about by himself, but an intelligent approach to the selection and training of a purchasing staff, working together for one common purpose, is the only way that this goal will be reached.

M. B. Bird, Pur. Agt.
Link Aviation, Inc.
Binghamton, N. Y.

VALUE ANALYSIS ARTICLES

Would you be good enough to furnish us with the dates of various issues of PURCHASING which have had articles relative to Value Analysis. We would also appreciate any information you could furnish relative to any publications available on the subject.

J. R. Millar, Mgr. Pur. & Stores
Polymer Corporation Limited
Sarnia, Canada

• Major articles on Value Analysis published in PURCHASING include the following:

Purchase Analysis, (Ford Issue) July 1948, pp. 176-197.

Value Analysis, (General Electric Co.) June 1950, pp. 94-101.

Westinghouse Cost Reduction Program, June 1951, p. 107.

Evolution of a Purchase Analysis Program, June 1951, p. 121.

Progress Report on Westinghouse Cost Reduction Program, May 1953, p. 94.

Cooperating to Cut Costs, May 1953, p. 98.

How Purchasing Contributes to Cost Reduction, May 1953, p. 101.

Building a Value Analysis Section, May 1954, p. 104.

Where and How to Look for Value, May 1954, p. 110.

Value Analysis — Purchasing's Part in Cost Reduction, June 1955, pp. 39-67.

Organization for Value Analysis, August 1955, p. 80.

Value Analysis in the Manufacturing Division, August 1955, p. 83.

Teamwork for Cost Reduction, September 1955, p. 71.

Value Analysis in the Smaller Company, September 1955, p. 86.

Cost Drive Helps in Meeting Competition, October 1955, p. 73.

How to Save Dollars with Purchasing Research, November 1955, p. 71.

How to Conduct a Value Analysis Seminar, November 1955, p. 94.

The National Association of Purchasing Agents, 11 Park Place, New York 7, N. Y., has issued a booklet entitled "Cutting Costs through Analyzing Values", which gives detailed instructions on establishing a value analysis program in the purchasing department. The booklet is available to Association members only.

GRAY MARKETS AGAIN?

Over the past few months certain materials in this country are in short supply again. Sitting behind a desk as a purchasing man listening to the various sales representatives giving you explanations for shortages, reading the economic forecasts of the so-called experts, you tend to believe that such shortages are due to our higher rate of productivity, higher purchasing power of our population, the ever increasing number of people living in this country and, generally, to the world situation and its resulting stockpiling for defense.

But, unfortunately, in practice this doesn't seem to be so.

For example, certain steel is in very short supply. But all you have to do is pick up the phone, call a few contacts in the big cities like Chicago and New York, and you can have it shipped tomorrow—if you pay twice the price.

The same is true of another commodity which is widely used in our industry—the paper industry. This is titanium dioxide, which is used by paper mills as coating material, by ink manufacturers to make inks, and also to a large degree by paint manufacturers as a base of their finished product.

About eight months ago, the prime manufacturers in this country started to put their good and old customers on allocation. Up until now, they are shipping, although with some delay, the quantities promised. But it seems strange that at the same time, the same commodity, under the same brand names, and in original packaging, can be bought on the so-called "gray market" at close to double its market price in any quantity desired.

I believe that purchasing agents should play a vital part to stop such practices by putting pressure on their sources of supply to more carefully watch how much they sell and to whom they sell. If it goes right from the manufacturer into black market channels (and I use that word purposely because it is no "gray" market if you have to pay double the market price) they hurt their own industry just as much as their customers'.

This is a deplorable situation, and one in which the help of the whole purchasing profession should be enlisted.

F. S. Kaufmann, Dir. of Pur.
Atlanta Paper Company
Atlanta, Ga.

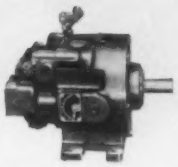
What's New in VICKERS HYDRAULICS

Illustrated here are new and recently improved units added to Vickers most complete line of oil hydraulic equipment. Look to Vickers as a single responsible source for integrated hydraulic systems. For characteristics of any of these components, please write for Installation Drawings by number.

SERIES T8 PIPELESS POWER PACKAGE consists basically of electric motor, hydraulic pump, control circuit and reservoir. Available in 3 circuits, 3 pump sizes and 3 electric motor sizes. Inst. Dwgs. 178706, 7 & 8.



V-LINE PISTON PUMPS AND MOTORS for 5000 psi. Unique design minimizes relative movement between rotating parts, provides increased bearing surfaces and reduces complexity of parts. Result is improved efficiency, longer life, and reduced maintenance. Supplied with straight thread connections. Bulletin 55-72.



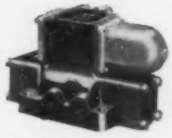
Variable Displacement Pump With Servo Control. Inst. Dwg. 179061. Also available with pressure compensator control. Inst. Dwg. 179060.



Constant Displacement Fluid Motor. Inst. Dwg. 179059. Available also is a Constant Displacement Piston Pump. Inst. Dwg. 179058.



DG4S4 ⅛" solenoid operated. Inst. Dwg. 182412. ¼" available later.



DG5S4 ¾" solenoid controlled pilot operated. Inst. Dwg. 182413. 1¼", 2", 3" available later.

SOLENOID OPERATED 2- AND 4-WAY VALVES with many improved features. (1) Integral junction box (2) covers that retain the solenoids and (3) manual operation for testing. Compact and versatile. Gasket mounting simplifies installation and overhaul . . . also minimizes piping.

TRAVERSE AND FEED CYCLE CONTROL PANEL Improved design. Provides any cycle sequence of rapid advance, adjustable feed, dwell and rapid return motions. Maintains smooth and constant preset feed rate (either one or two) regardless of fluctuations in cutting tool resistance or hydraulic pressure.



CPP-2242 Solenoid Controlled. Pilot Operated (gasket mounted) provides smooth, low current operation. Inst. Dwg. 182414.



CG-03 Relief Valve (gasket mounted). Subplates available with pipe or straight thread connections. Inst. Dwg. 175630. CS-03 available with straight thread connections. Inst. Dwg. 175629.



CO2 Reciprocating Cycle Control Panel For Gasket Mounting. Inst. Dwg. 177083.



4CG-03 Pilot Operated Check Valve, gasket mounted. Inst. Dwg. 135468.



CG-714 Deceleration Valve, gasket mounted. Inst. Dwg. 172902.



CGV-06 5000 psi Relief Valve gasket mounted with straight thread connections. Inst. Dwg. 177609.

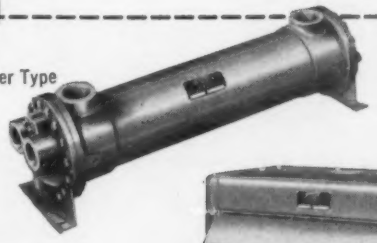


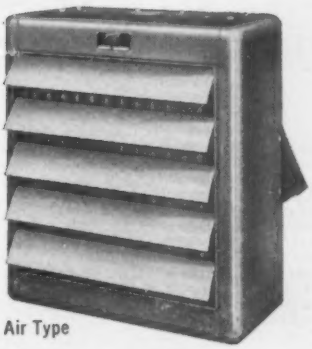
URG1 Unloading Relief Valve, gasket mounted. Inst. Dwg. 178974.



SG1 Pressure Switch, gasket mounted. Inst. Dwg. 172538.

Water Type





Air Type

OIL COOLERS Vickers Oil Coolers are characterized by their very high rate of heat transfer per unit of space occupied. Bulletin 55-69.

For further information on any unit shown, ask for Installation Drawing by number indicated. 7435

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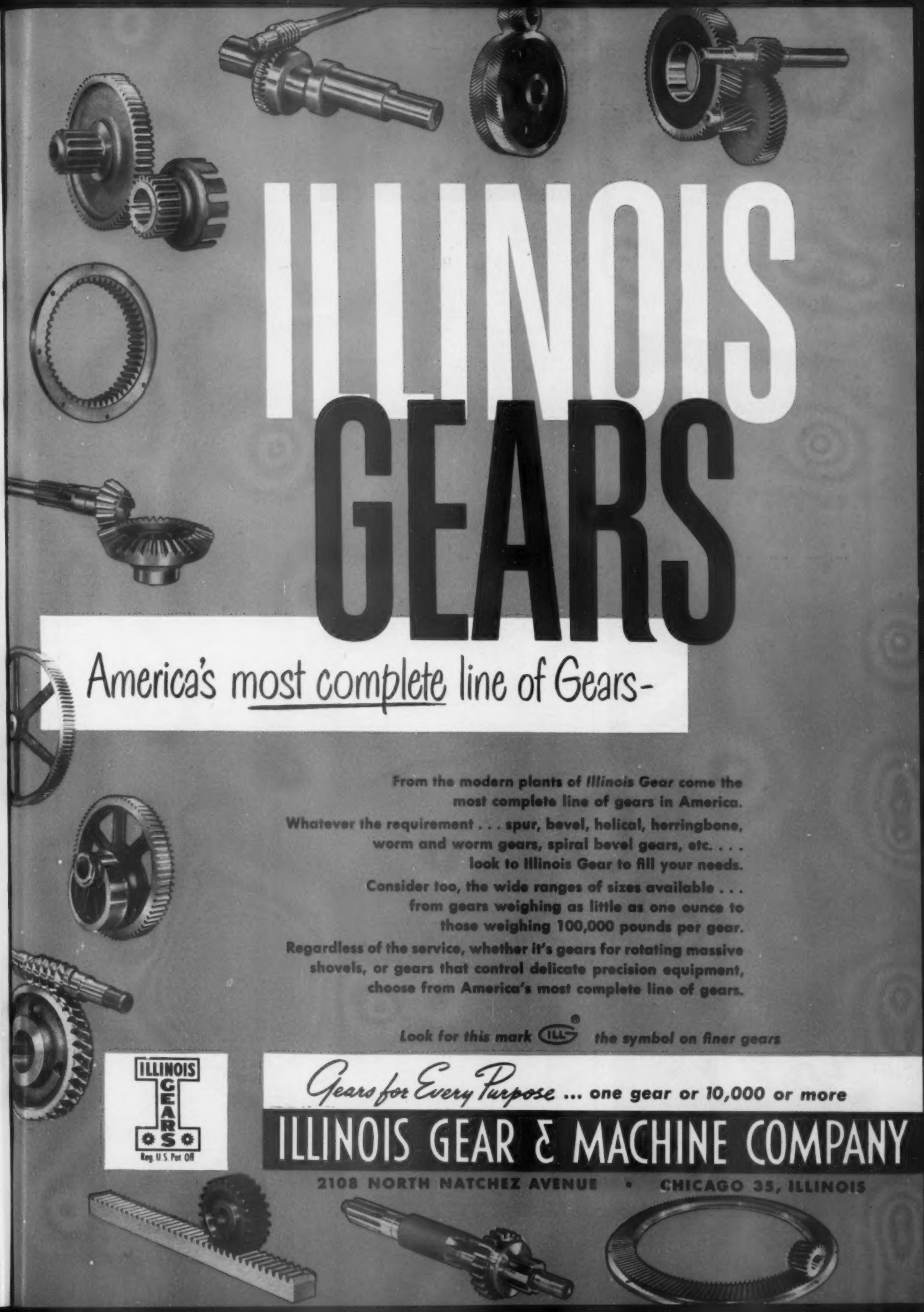
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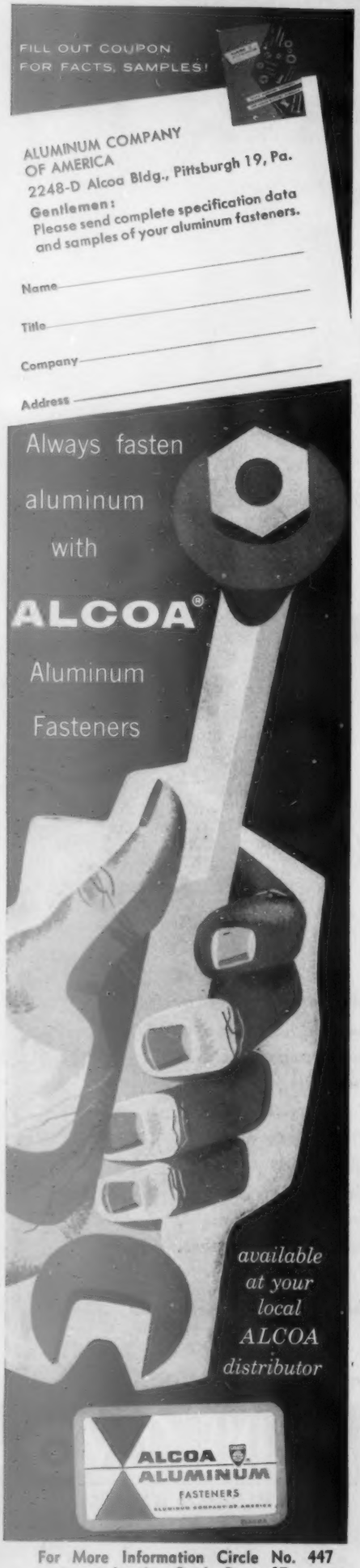
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FAFNIR BUILDS PLANT NO. 6

New five-acre plant at Newington, Connecticut will streamline machining and heat treating operations

Fafnir Plant No. 6, now nearing completion, will house the most modern machining and heat treating equipment and will provide for economical storage and handling of steel.

The opening of this large plant represents an increase in floor area of about 20% and an important step in a long-range program to speed production of over 10,000 types and sizes of Fafnir ball bearings and ball bearing units. The plant occupies one corner of a hundred-acre site which will make possible a four-fold expansion.

Fafnir's 18 strategically-located branch warehouses and its coast-to-coast network of authorized distributors will soon reflect the added productive capacity which these new facilities make possible.

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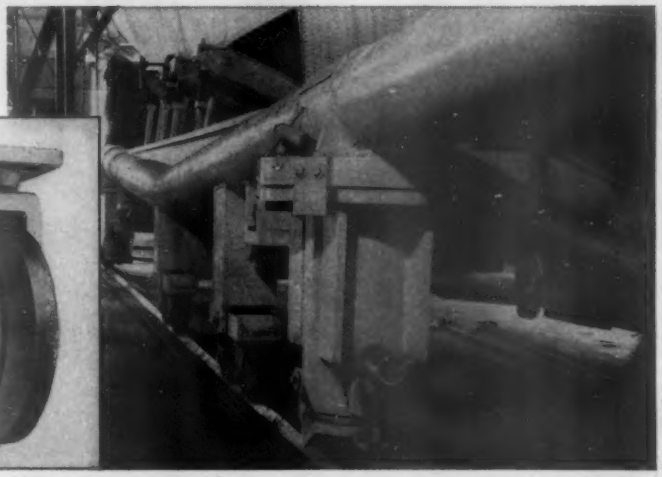
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MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

Industry gets mobility plus control with Bassick grooved wheel casters



Bassick super heavy duty 10" grooved wheel caster.



Aircraft industries put Bassick grooved wheel casters to work in every stage of production. Here, on a giant mating cradle, they carry the hull of an 80-ton Navy transport plane to mate with its nose and tail sections. Grooved wheels on inverted angle iron tracks provide the positive control needed.



Aircraft fire power also rides Bassick grooved wheels to the assembly point. Note here that they operate just as well off tracks as on. This gives you greater flexibility in designing your materials-handling system. The heaviest bombers (below), as well as parts, are handled by precision, super heavy duty Bassick grooved wheel casters with Timken axle bearings, indestructible horn, 1" heavy duty steel axles.



Other products on grooved wheels

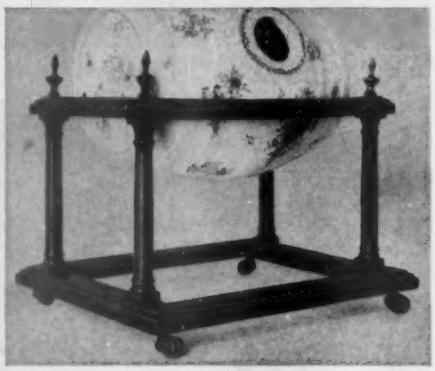


Prefab house sections roll into place as still another industry finds use for Bassick grooved wheel casters. Providing positive control and easy mobility, they're production line favorites in the automotive, aircraft, manufacturing and many other industries.



Nike gets send-off as crew scrambles to prepare these ground-to-air missiles for firing test. Members of the Nike crew not shown, but important here are Bassick grooved wheel casters—also used on other guided missiles.

Ben Franklin's casters



Franklin's Punch Keg, the ornate piece of crockery above, was a gift he received in France about 1780. But the caster-equipped stand that holds it he built himself. If Ben had waited, we're sure that the Bassick Distributor in Philadelphia would have helped him pick the best casters for the job.

See your Bassick distributor . . .

Here are two of many ways he can help you: He's up on the latest developments in materials-handling with casters. And he'll keep needed units flowing—from his stockrooms—into your plant.



30% production costs reducible

Cost analysts report that materials-handling—which comes to about 30% of production costs—is the one cost area most capable of reduction. A good way for you to start paring costs is shown above. That production line of automobile axles moves safely and easily on Bassick Casters.



Sweet's

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Bassick
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JENKINS PRACTICAL PIPING LAYOUTS

77

Code	Quan.	Jenkins Valve	Service
A	1	Fig. 677A Br. Gate	Cold water well shutoff valve
B	2	Fig. 295 Br. Sw. Check	Prevent backflow thru well pumps
C	1	Fig. 677A Br. Gate	Warm water well shutoff valve
D	6	Fig. 368 Br. Gate	Circ. pump shutoff valves
E	1	Fig. 106A Br. Globe	Settling Tank drain valve
F	1	Fig. 368 Br. Gate	Shutoff discharge to warm water well
G	1	Fig. 368 Br. Gate	Control water to evaporator
H	1	Fig. 368 Br. Gate	Control water to condenser
J	1	Fig. 368 Br. Gate	Control water to warm water well
K	1	Fig. 368 Br. Gate	Control water to ch. water pump
L	1	Fig. 106A Br. Globe	Constant head regulator bypass
M	2	Fig. 368 Br. Gate	Constant head regulator shutoff
N	2	Fig. 352 Br. Sw. Ch.	Prevent backflow thru circ. pumps
P	2	Fig. 368 Br. Gate	Ch. water temp. regulator shutoff
R	1	Fig. 106A Br. Globe	Ch. water temp. regulator bypass
S	2	Fig. 368 Br. Gate	Evaporator shutoff
T	1	Fig. 352 Br. Sw. Check	Prevent backflow thru evaporator
U	1	Fig. 368 Br. Gate	Shutoff water to recovery & precon coil
V	1	Fig. 368 Br. Gate	Shutoff discharge to cold water well
W	1	Fig. 368 Br. Gate	Control water to hot water pump
X	1	Fig. 368 Br. Gate	Shutoff water to heating coil
Y	1	Fig. 368 Br. Gate	Control water to hot water pump
Z	1	Fig. 368 Br. Gate	Control water to ch. water pump
AA	1	Fig. 368 Br. Gate	Control water to warm water well
BB	2	Fig. 368 Br. Gate	Condenser shutoff
CC	1	Fig. 47 Br. Gate	Expansion tank shutoff valve
DD	1	Fig. 47 Br. Gate	Expansion tank shutoff valve
EE	1	Fig. 47 Br. Gate	Control makeup to expansion tank
FF	1	Fig. 92 Br. Sw. Check	Prevent backflow to water lines
GG	5	Fig. 106A Br. Globe	Drain valves

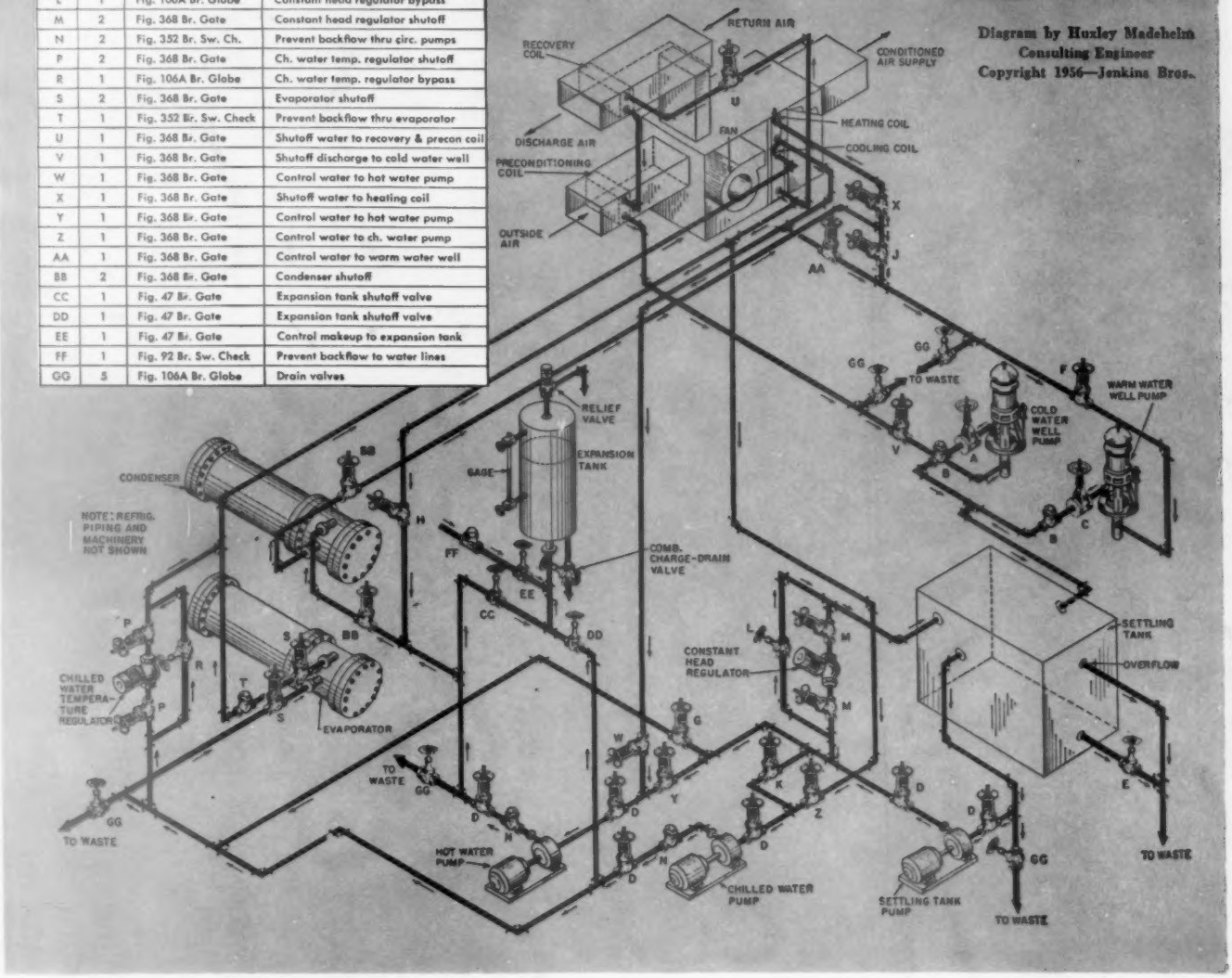


Diagram by Huxley Madeheim
Consulting Engineer
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How to plan piping connections for all-year

AIR CONDITIONING WITH THE HEAT PUMP

Well water is used in the basic heat pump installation illustrated. Such a system could readily serve a building with several exterior and interior zones, which would have many air handling units. For simplicity, only one unit is shown in the diagram.

For heating demands, this system provides a closed circuit consisting of hot water pump, condenser, and heating coil. For cooling, a second closed circuit consists of chilled water pump, evaporator, and cooling coil.

During the heating season, water is supplied to the settling tank from the warm water well (about 60° F). It is circulated by the chilled water pump to the evaporator, and then to the cooling coil to provide cooling, where needed, for interior areas. The water then flows to the recovery coil, picks up heat from waste air and carries it to preconditioning coil, where it is used to preheat outside air. The resulting chilled water is discharged to the cold water well.

During the intermediate seasons, water is supplied to the settling tank from the cold water well (about 50° F). It is circulated by the hot water pump to the condenser, and then to the heating coil to provide heat, where needed, for the exterior zones. The water is then discharged to the hot water well.

During the cooling season, water from the cold water well is pumped to the settling tank, and then circulated to the evaporator and the cooling coils. It is next used to cool the condenser, and is then discharged to the hot water well. If the demand for cooling is low, and the well water cold enough, the evaporator may be bypassed.

Consultation with accredited piping engineers and contractors is recommended when planning major piping installations.

Enlarged diagram and full description of this layout free on request. Ask for Layout No. 77. Jenkins Bros., 100 Park Ave., New York 17.

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